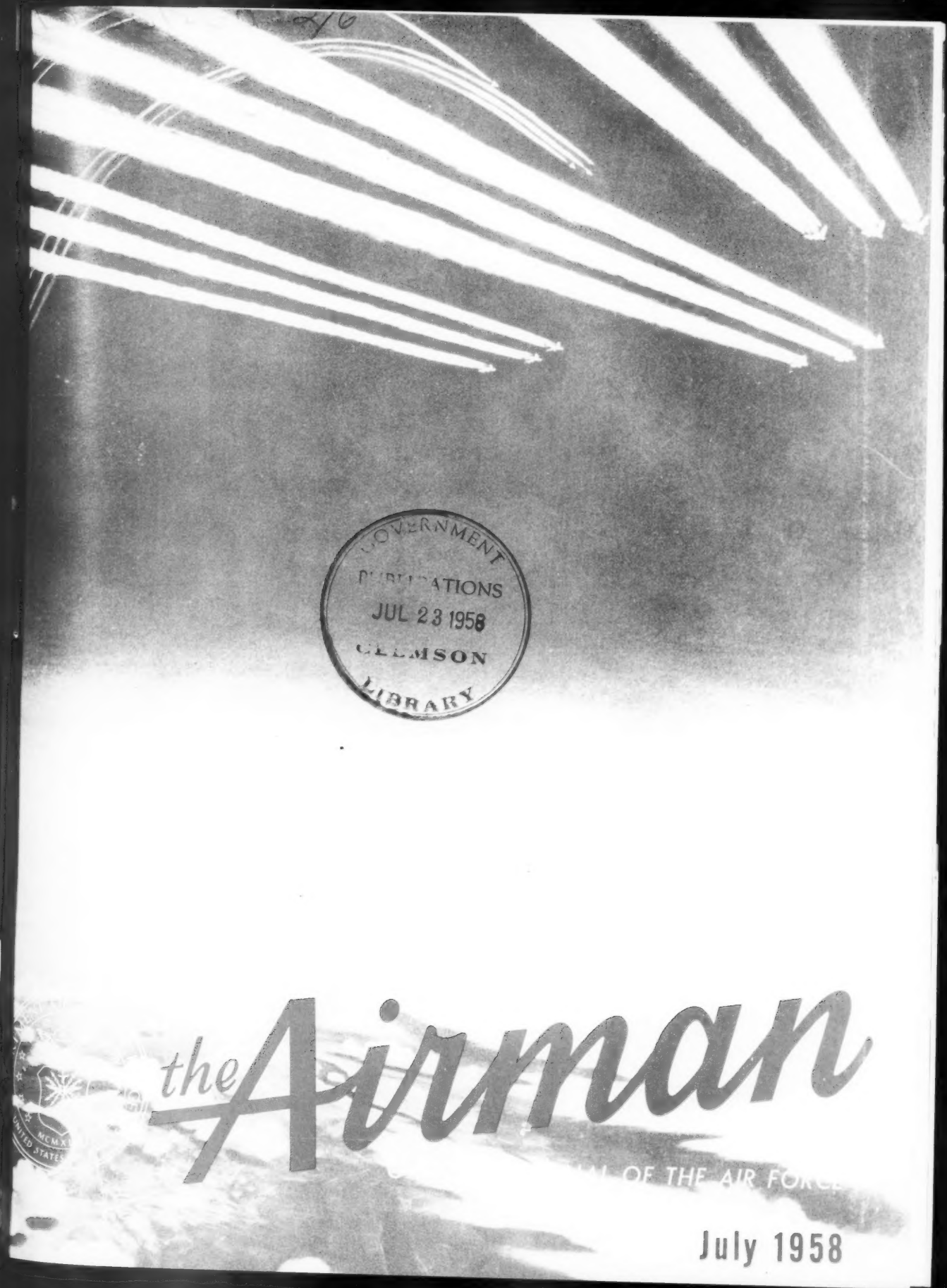

GOVERNMENT
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the Airman

OF THE AIR FORCE

July 1958

NOTES FROM EUROPE

"Well, you command 'em up the hill and I'll command 'em down."

"*Nein, Fraulein,* for centuries it's been *ASSUMED* that they were empty."

"Relax, old boy—they don't propose to standardize *EVERYTHING!*"

"He's in a frozen field."

"Gentlemen! *GENTLEMEN!* One decision at a time! What's it to be, color or colour?"

"I'll go along with standardization of weapons, unified command, and coordinated air defense— *BUT I CAN'T STAND WARM BEER!*"

the Airman

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CONTENTS

The Edge of the Sword
United States Air Forces in Europe 3

A Shield and a Symbol
The North Atlantic Treaty Organization 8

Caroline Antoinette
From France to the AF Academy 12

West Germany's New Air Force
Germany's air contribution to NATO 13

Fans to Stovepipes
Jets in primary 18

Super Connie Mission
Early warning off the Pacific Coast 19

'Riting Readable Regs
The drive to simplify USAF writing 22

The Man and the Bird
Training on the Snark 24

The Story of Air Materiel Command
How AMC does its job 26

Asia Breathes Easier
Ingenuity and SAMAP 31

It's a Grand Old Name
Story of the first Explorer 39

New Career for "Old" Airmen
Teaching after you retire 45

DEPARTMENTS

Letters to the Editor 2 **Airman's World** 33 **In My Opinion** 37

IN THIS ISSUE

AIRMAN staffer T/Sgt. John K. O'Doherty recently returned from a trip to Europe where he formerly made a name for himself as a perceptive writer for the old TAF REVIEW. In two companion pieces, *The Edge of the Sword* (USAFE) and *A Shield and a Symbol* (NATO) he discusses the importance of our organizations in Europe.

☆ ☆ ☆

This month's cover painting—red, white, and blue for Independence Day—is the inspired work of Dean Fausett. Titled *Global Power*, it was painted for the Air Force in 1954. Two smaller copies were made by the artist, one of which was presented by General Twining to the RAF in 1956. Dean Fausett, a member of the National Society of Mural Painters, studied at Brigham Young University, the Art Students' League, and the Beaux-Arts Institute of Design. His work is in many art museums throughout the United States.

USAF PERIODICAL 30-15

SUBSCRIPTIONS

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THE AIRMAN is primarily a medium for the exchange of ideas and information among Air Force personnel. Readers are encouraged to submit articles, short subjects, photographs and artwork. All contributions will be given consideration; suggestions and criticisms are welcomed. Opinions expressed by individual contributors do not necessarily reflect the official viewpoint of the Department of the Air Force. All photographs are official USAF photos unless otherwise designated.

Use of funds for printing this publication approved by the Secretary of the Air Force and the Director of the Bureau of the Budget July 5, 1956.

GREMLINS IN SPACE?

As no few readers may have suspected, gremlins had a mischievous time with the March-April issue of THE AIRMAN when it was going to press. In particular, they got in some dirty work on *The Wide New Yonder*, which has resulted in a number of oral queries and letters from perplexed readers.

One passage in question (page 16, column 1) is amended here with additional parenthetical matter inserted for readers who did not see the article.

"Hitherto unknown galactic systems were photographed out to a distance of a billion light-years (in the National Geographic Society-Palomar Observatory Sky Survey)—the maximum range for obtaining images of hard clarity definition with the Schmidt's optical power. The rays which produced the images of the most remote bodies had to travel the mind-numbing equivalent of 10 million centuries to reach the emulsion on the telescope's plates.

"Pre-Survey estimates of the Schmidt's penetrating capability proved far too conservative. At first the instrument's photo-mapping effectiveness was thought to be limited to celestial areas about 3,000,000 centuries distant. Astronomers, after a careful study of the initial series of Schmidt photos, revised their estimates upwards to 6,000,000 centuries. Finally, following still further study of the early photographs and the additional ones accumulating, plus numerous retakes, it was determined that scientific evidence on hand showed the Schmidt's 'eye' had scanned the heavens out to one billion light-years, or 10 million centuries."

(The one-billion-light-year figure is to be considered tentative, since final calibrations in the Sky Survey may even revise it upwards again.)

Next the cool larceny of the numeral "4" from a reference to the average orbital speed of the *Explorer* (page 11, column 2) left it to read "¾ of a mile per second" instead of "4¾ miles per second." Readers who assert that the correct figure must be 5 miles per second confuse orbital velocity with escape velocity, which does not mean the same thing. —THE EDITOR.

ON RETRAINING

Sir: *In a recent issue of* THE AIRMAN *you ran an article on the Accounting and Finance career field. I had an unfortunate experience with this field.*

In July 1955, volunteers were requested for retraining into the accounting section at Palm Beach AFB, Fla. I had civilian accounting experience and answered the call.

After 10 months' work, a request was submitted to the base testing section for me to take the accounting test prior to acquiring the new AFSC and being upgraded. The request was returned with the information that a Project Guidance waiver had not been submitted when I was transferred to the new field and therefore I could not be tested. By the time this paperwork could be completed, the shortage had been alleviated and my request was again returned, this time disapproved.

As a result, I had to reenlist in my original field, supply, my morale took a beating, and I lost a year toward promotion. It seems to me there could be better coordination concerning such career field transfers.

S/Sgt. Woodrow Dunn
Palm Beach AFB, Fla.

Officials in the Airmen Retraining Section, DCS/Personnel, Hq USAF, regret that such administrative slip-ups occur. They underscore the need for efforts constantly being made to clarify and improve existing regulations so that individuals do not receive career setbacks through negligence, misunderstanding, or misinterpretation of governing regulations.

★ ★ ★

MORE RETRAINING

Sir: *I have been following your articles on retraining in* THE AIRMAN *and to date the news remains the same for myself and others in my field—all bad.*

I am an A/1C with an AFSC of 70250. So far it has not been listed on any of the resource-skill rosters in your stories. I would like to be retrained in some phase of electronics as I have a high aptitude score for that field.

Is there any forseeable hope of my AFSC being added to the list eligible for retraining?

Name Withheld

Sir: *Your recent article,* The Man on the Flying Trapeze, *(January issue,* THE AIRMAN*) was extremely interesting and created a new desire on my part to retrain into that field.*

In your retraining series to date I have not seen my AFSC listed as eligible. Could you please help by supplying the needed information on whether I am eligible to retrain from 70250 into the boom operator field?

A/1C Donald Gluntz
APO 633, New York, N. Y.

The latest revision of the retraining program (See, *Retraining Revision,* THE AIRMAN, June issue) does not authorize A/1C or A/2C possessing CAFSC 70250 to apply for school retraining. Officials in the Airmen Retraining Section, however, indicate that ladder manning is improving in this specialty and it is hoped that continued improvement will warrant placing AFSC 70250 on the resource-skill list sometime in the future.

★ ★ ★

FSSD CHANGE

Sir: *I entered the Air Force in 1955 and was awarded a foreign service selection date of 1941. Last year I spent an extended temporary duty period in France.*

No adjustment has ever been made to my FSSD to reflect this TDY period. Can you tell me what authority is used in determining such an adjustment?

A/3C Edward Broderick
Cannon AFB, N. Mex.

Officials in the Warrant Officer and Airman Assignment Division, DCS/Personnel, Hq USAF, advise that the original foreign service selection date, while correct when originally awarded, should be changed to reflect the provisions contained in paragraph 12, Part 1, Chapter 2, Section D, Change to AFM 35-11, dated 28 October 1957. The entry should read, "None," followed by month and date of enlistment.

As for the adjustment, it should indicate the period of temporary duty served in an overseas status—same authority.

★ ★ ★

SLIPS STICK

Sir: *Reference is made to the article.* Whoosh! *on page 31 of the March-April issue of* THE AIRMAN.

Information contained in this item says 32,400 m.p.h. is the equivalent of seven miles per second. My slide rule says nine m.p.s. The correct figure should be 25,200 m.p.h.

T/Sgt. Robert Maltsberger
Tucson, Ariz.

The original release carried the incorrect information which you discovered, and our Departmental Editor, no mathematical whiz himself, failed to catch the error. The only "slide rule" with which he is familiar is that governing a close play at second.

THE EDGE OF THE SWORD

by T/Sgt. John K. O'Doherty
Airman Staff

IN THE PERIOD immediately following the second World War, millions of Americans were shocked and dismayed by the realization that victory for the Allies did not automatically carry with it the guarantee of enduring peace and security. In the midst of a tremendous struggle to erase the scars of conflict, the world continued to suffer from uneasiness, while Europe—in particular—became a stage upon which the influence of new, conflicting forces was vividly manifested. Faced with the challenge of steadily mounting pressures, the United States abandoned its traditional policy of isolationism, and joined with the free nations of the West to forge a sword and a shield against the threat of aggression.

America's aerial contribution to the bulwark of democracy which has been raised in Europe is contained in the United States Air Forces in Europe (USAFE), the major air command charged with responsibility for Air Force interests in an area five times as large as the United States. This giant, crescent-shaped slice of world geography spreads over 17½ million square miles of land and sea from Norway and England through Western Europe to Morocco, along the Mediterranean and across the Middle East beyond India to Ceylon.

Two numbered air forces are included in the several subordinate commands making up the widespread complex of USAFE. The 3d Air Force, with headquarters at South Ruislip near London, is responsible for USAFE interests in the United Kingdom. In addition to maintaining a sophisticated degree of combat proficiency in its assigned tactical units, 3d Air Force provides support to elements of the Strategic Air Command deployed at bases in England. As the predominant American military service located in the area, it also supplies administrative and logistical services to U. S. Army and Navy personnel in Great Britain.

From its headquarters at Wheelus Air Base, Tripoli, Libya, 17th Air Force similarily supports SAC units in North Africa, in addition to its air defense mission and other responsibilities.

The main concentration of tactical airpower assigned to the defense of Europe is deployed over a network of bases in France, Germany, and the Netherlands, under the operational control of USAFE. The command headquarters is divided into two sections, with administrative functions for the 100,000 personnel performed at Lindsey Air Base in the city of Wiesbaden, Germany. About 45 air miles to the south, a streamlined combat headquarters—Headquarters USAFE Advanced Operations Unit (USAFE ADVON)—is located at Ramstein/Landstuhl Air Base in the German state of Rhineland/Phalz. The ADVON unit is responsible for all tactical operations and communications and coordination with the United States Seventh Army, together with a number of intelligence and flying safety functions.

Tactical units under ADVON, along with the combat elements of 3d Air Force, constitute the primary atomic strike force which would be made available to the Supreme Allied Commander, Europe, in the event of aggression. This force has been undergoing a steady, progressive process of development since 1951 when the program of air base construction for NATO in Europe was begun.

By continued reorganization and economic consolidation of its resources, and with persistent emphasis on the qualitative aspects of its operations, USAFE has attained a peak of polished military proficiency under the most up-to-date concepts of strategy. In the course of this development process, six new types of aircraft were introduced into USAFE units on the Continent in a single year. The inventory of weapon systems now includes such high-performance models as the B-57, the RB-66, and the F-100 *Super Sabre* which arrived to serve its first overseas duty in the theater early in 1956. F-101 and RF-101C twin-jet *Voodoos* are scheduled to make their European debut in late summer of 1958.

Since the Western Alliance is dedicated to a policy of using force only to resist aggression, USAFE strategy is based on instantaneous readiness to launch a swift and dynamic counterattack. Reaction time is of the utmost importance since jet flight from the East Zone of Germany to the Rhine River in the central area consumes but a scant seven minutes. The 36th Fighter Day Wing at Bitburg Air Base stands guard over the very heart of Germany from its vantage point near the junction of the Mosel and the Rhine.

From the North Sea to the Alps, a chain of radar sites maintains a constant watch over the skies to the east; some of the operating locations of the 501st Tactical Control Wing are virtually within a stone's throw of the stretch of no-man's-land marking the Iron Curtain. The F-86D all-weather interceptors of the 86th Fighter-Interceptor Wing —an air defense giant of seven operational squadrons— stand alert on a 24-hour watch, ready to rise and climb at a split second signal. The "Dogs" are armed with twenty-four 2.75-inch *Mighty Mouse* rockets loaded in a retractable package in the fuselage.

Two tactical reconnaissance wings, the 66th at Sembach Air Base in the Palatinate and the 10th at Spangdahlem in the area of the Hunsruck Mountains, are available to fly recon missions by day and night.

UNITED STATES AIR FORCES IN EUROPE

F-86 *Sabrejets* based at USAFE installations in France and Germany fly NATO air defense missions over continental Europe.

The striking power of USAFE's retaliatory force is represented in day fighter, tactical bomber, and fighter-bomber squadrons deployed over an area extending from deep in central France to the Rhine River. These units—like the all-weather interceptors—maintain numbers of aircraft and crews on constant round-the-clock alert. Specific missions are assigned in advance to each squadron in the event of an attack from the east. There is nothing in the history of World War II to provide a yardstick by which the firepower of USAFE's F-100 squadrons might be measured.

General Norstad, SACEUR, is greeted by German officers on arrival at Bonn.

This is the strength that constitutes an effective deterrent to aggression.

USAFE's arsenal of modern weapons also includes the Martin *Matador*, a tactical guided missile which can be launched from almost anywhere and in any kind of weather. The 701st Tactical Missile Wing became the Air Force pioneer wing in the missile field when it was activated at Hahn Air Base in September 1956. The 701st Wing is divided into three Tactical Missile Groups, the 585th, 586th, and 587th, which are deployed at dispersed locations in Germany. Each group is completely capable of independent operation, being composed of a support squadron, a communications and guidance squadron, and a launch squadron.

The TM-61C *Matador* can be launched from the bed of a truck trailer designed for the purpose; no gantries, elaborate block houses, or fixed facilities are required. The group Missile Operations Center (MOC) may be housed in a prefab building to provide protection from the weather, and from here command supervision is exercised over the launch crews. The weapon is completely mobile, either over the road or across rolling country, and a small clearing in the forest provides ample space for the launch operation. Once it leaves the launcher, the *Matador* is picked up on the radar scopes of the communications/guidance sites which direct it on the path to target. While the *Matador* is described as a tactical missile, its range is measured in hundreds of miles.

Since—in the event of aggression—USAFE bases on the Continent would constitute rewarding targets for enemy aircraft which might penetrate the interceptor defense, the command has established a program for dispersal of operational squadrons. Each wing is assigned certain "dispersed operating bases" (DOBs), and, if the need should arise, some squadrons would disperse to these outlying locations while those at the main base would conceal aircraft on the ground around the home area as well as possible. A requirement of the dispersal plan stipulates that at least one such alternate base be located no more than 30 to 50 miles from the headquarters, and that it be readily accessible by surface transportation.

Other more distant bases may require air transport support to make them useful in time of emergency. Dispersal bases vary in size, and some are relatively primitive in terms of facilities. They may consist of only the barest essentials of a runway and parking space; underground storage for fuel, ammunition, and supplies; limited navigational aids; and a tent area for accommodation of personnel. Exercises in dispersal deployment are carried out at frequent intervals so that the plan can be expected to work with smooth efficiency in time of danger.

Air logistic service and other airlift support are provided to the tactical units of USAFE by the 322d Air

Division, a subordinate component of the command with headquarters at Evreux in France. Troop carrier squadrons of the 322d, equipped with C-123 and C-119 aircraft, fly daily scheduled air logistic missions covering every corner of the USAFE area. This airlift capability is further augmented by units of the Tactical Air Command flying C-124 *Globemasters* which serve six-month rotational tours in Europe under operational control of the 322d. In addition, the 322d provides medical air evacuation service to the entire USAFE area, transporting an average of 1,000 patients per month. The C-131A *Samaritan* transports used in air evac work are specially equipped for the purpose, with complete pressurization throughout and provisions for administration of oxygen to patients.

Three great materiel depots of the Air Materiel Command provide the myriad items of supply necessary for smooth operation of USAFE. Priority cargo is airlifted from the United States by MATS aircraft to Burtonwood in England, Chateauroux in France, and Nouasseur in Morocco for further distribution by the air logistic service of the 322d Air Division. The twin-base installation at Chateauroux houses the headquarters of Air Materiel Forces, European Area.

Although USAFE is responsible for the United States aerial contribution to NATO, the command is not in itself a part of the NATO organizational structure. In the United States —or national—command structure, USAFE is a component of the United States European Command, or USEUCOM, which is directed by the Joint Chiefs of Staff. This is the highest national American command in Europe, and it exercises jurisdiction over air, ground, and naval forces assigned to the theater. The commander in chief of USEUCOM is Gen. Lauris Norstad, USAF, who—serving in a joint capacity—is also commander of the top NATO command in Europe—Supreme Headquarters Allied Powers Europe—or SHAPE. Thus General Norstad as commander of EUCOM and Supreme Allied Commander Europe (SACEUR) over SHAPE heads both the national and NATO command structures. The chain of command leading downward from EUCOM includes only American forces, while the chain of command from SHAPE embraces military forces—land, sea, and air—of every nation contributing to the NATO defense of Europe.

Member of combat control team directs paradrop of troops in NATO maneuver.

Under the terms of the North Atlantic Treaty of 1949 it was determined that each of the partner nations—12 countries comprised the alliance at that time—would be responsible for the complete support of its forces during peacetime. This means that the British, French, Americans, Italians, and all the others must pay, feed, clothe, house, and otherwise maintain their troops in the absence of hostilities. Joint funds are contributed to NATO by the countries concerned for the construction of facilities which might be made available to more than one nation—

USAFE planes flew blankets to Austria for the relief of Hungarian refugees.

Austrian soldiers unload food from a USAF C-124 *Globemaster* for distribution to refugees of the Hungarian uprising.

USAFE's *Matadors* are transported by air to the desert range at Tripoli for periodic launching tests by crews of the 701st.

pipelines for fuel, communications networks, air defense facilities, and the like.

In the event of hostilities—and in many simulated wartime exercises conducted under the auspices of NATO — operational control of USAFE's primary atomic strike force passes to the 4th Allied Tactical Air Force, an international command in the SHAPE structure. In addition to the American units, 4th ATAF includes in its sphere of operational jurisdiction the No. 1 Canadian Air Division and *Premier Commandement Aerien Tactique* or First Tactical Air Command of France, popularly known as Premier CATAC. Both the Canadian and French components maintain bases in France and Germany, with the French headquarters at Lahr in the area of the Black Forest, and the Canadian headquarters near the historic city of Metz, France.

These French and Canadian combat units assigned to the 4th ATAF are equipped with modern jet aircraft, notably the Canadian CF-100 and the French *Mystere*.

The commander of 4th ATAF is an American officer, Maj. Gen. Edward J. Timberlake, USAF, but his staff is composed of American, French, Canadian, and German airmen who are completely integrated in the operation of the various agencies of the command. Units of the Air Force of the Federal Republic of Germany are currently being phased into operational status with the 4th ATAF.

The composition and tactical posture of USAFE's combat-ready strike force are illustrative of a newly recognized aspect of airpower flexibility in theater operations. Once the three primary requirements or operational pedestals have been established—command communications, airborne control, and reconnaissance intelligence—the whole may be capped with combat squadrons of the type and in the numbers best suited to requirements of the mission. Thus the striking power of USAFE can be augmented in a matter of hours by deploying combat squadrons of the Tactical Air Command overseas if the need should arise. The practicality of such movements has been demonstrated on a number of occasions. During the NATO exercise *Whipsaw*, a combat-readiness test which included all elements of the Allied command from Norway to Turkey, fighter-bombers, tactical bombers, and recon aircraft were deployed overseas from bases in the southeastern United States to supplement the forces in the theater.

Squadrons equipped with flyaway kits can sustain themselves for at least 30 days after the over-water flight, and all the impedimenta of administrative and housekeeping support are left behind. For practical purposes in such circumstances, operational control of the units involved passes from the supplying agency to the theater commander.

As the executive agency for the Air Force in Europe and the Middle East, and as an instrument of United States national policy where aviation matters are concerned, USAFE is charged with a number of additional responsibilities above and beyond its role as a combat command.

Under the Mutual Defense Assistance Program (MDAP), USAFE provides support to Military Assistance and Advisory Groups (MAAG) which operate in many countries throughout the USAFE area of interest. American MAAG teams, coordinating with local government representatives, determine what items or services will be supplied under the military aid program, and make arrangements for the transfer of property and for the training of military personnel of the countries involved. The military aid program is not restricted to the partners of NATO, but includes, in addition, such countries as Spain, Iran, Pakistan, Saudi Arabia, and others. USAFE's 2d Air Division located at Dhahran Airfield, an installation of the Saudi Arabian government, provides technical assistance and training for members of the Saudi Arabian Air Force.

The European Defense Community Treaty, signed by the West European powers at Paris on May 27, 1952 and modified later by the Paris Ac-

cords, provided for the inclusion of a German contribution to the defense of Europe, although German sovereignty was still three years in the future. The USAFE Training Headquarters (originally designated the 7330th Air Training Group) was established at Furstenfeldbruck Air Base in Bavaria early in 1954, and initiated a training program which included Spanish, Turkish, Netherlands, and—later—German pilots and technicians.

The Furstenfeldbruck training center and its subordinate wings at Landsberg and Kaufbeuren—in addition to their other functions under MDAP—developed the nucleus of what is today the young and growing German Air Force. These bases in Bavaria—all former Luftwaffe installations—have since been restored to the Federal Republic of Germany.

USAFE's mission includes a wide variety of endeavors in nontactical areas. These include certain responsibilities in Off-Shore Procurement, a share in the administration of West Berlin, support of international air terminals at Rhein/Main and Orly Field, and special missions.

The most spectacular special mission in USAFE's history is the Berlin Airlift which began in 1948 and which ended in a significant victory for the West when the Soviets yielded in 1949. The airlift was the West's most eloquent answer to Communist encroachment and marked an important milestone on the high road toward European unity.

Each year the command continues to carry out similar special assignments. Many of them are less dramatic, and on a much more modest scale, but each is intended to promote international goodwill, to relieve suffering, or to inspire confidence in the principles of democracy for which America stands.

The winter of 1955-56 was unduly severe in Europe, bringing to some localities the most extreme weather conditions experienced in more than a hundred years. Distress and hunger visited many communities isolated by storms. On February 10, 1956, three C-119s of USAFE's combat cargo fleet paradropped 104,000 pounds of food and clothing to suffering Greek citizens in the rugged mountain areas, after an appeal for help from the Honorable Cavendish W. Cannon, United States Ambassador to Greece.

In the same month, indeed less than a week later, came *Operation Snowbound*. In 62 sorties flown from bases in Germany, USAFE transports airlifted some 700,000 pounds of food, clothing, and blankets to thousands of cold and hungry Italians, Sicilians, and Sardinians who had been cut off from normal supplies of food and fuel by unprecedented snowstorms.

When early spring of 1956 brought floods, earthquake, and fire to Turkey, USAFE's C-119s flew into the area with tents, rice, milk, and cheese to relieve the destitute population of the stricken communities.

The year 1956 continued to produce calamity and distress. In November, USAFE was called upon to airlift emergency supplies to Vienna for the relief of victims of the Soviet reaction to the Hungarian uprising. Five tons of medical supplies were flown from Zurich, Switzerland, to Austria. Three aircraft transported 15 tons of food and medicine from England. Bedding and food-service equipment were picked up at Wiesbaden, Chateauroux, and Burtonwood, and flown to Munich for further rail shipment to Vienna. When MATS aircraft began flying refugees out to safety in *Operation Safe Haven*, USAFE organizations provided all the complexities of support.

In the area of the Suez Canal, USAFE's 322d Aid Division evacuated 500 civilians to safety when fighting broke out in the fall of 1956. United Nations troops assigned to maintain peace in the troubled region were flown from Denmark, Norway, Sweden, and Finland to their port of embarkation at Naples in 322d transports.

These special missions, some large and some small, are accepted as normal duty by the personnel of USAFE. Tons of insecticide to combat a plague of locusts in Tunisia, an iron lung for a sick child at a village in France, food for the hungry anywhere —these missions are part and parcel of the vibrant spirit of international brotherhood which binds the people of the Free World together.

USAFE is combat-ready, whether the need is for guns or for butter. And in such combat-readiness lies our hope for the future.

THE COMMANDER IN CHIEF

The commander in chief of United States Air Forces in Europe is Gen. Frank F. Everest who was graduated from the United States Military Academy at West Point in 1928. In the following year he completed flying training at the Advanced Flying School, Kelly Field, Tex.

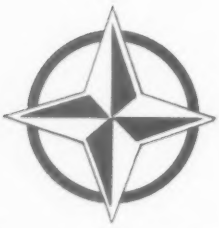
From the opening days of World War II, General Everest served in the South Pacific, and was commander of the 11th Heavy Bomb Group at New Hebrides Islands and Guadalcanal. Shortly after the war he was designated Air Force member of the Joint Staff Planners of the Joint Chiefs of Staff.

In May 1951 he assumed command of the 5th Air Force in Korea, and a year later became Deputy Commander of Tactical Air Command at Langley AFB, Va.

General Everest returned to Washington as Director of the Joint Staff in the Office of the Joint Chiefs of Staff, and in 1954 was appointed Deputy Chief of Staff for Operations, USAF.

On July 1, 1957, General Everest assumed duty as commander in chief of USAFE.

NATO



A Shield And A Symbol

Dramatic advances in a variety of technological avenues over the span of less than a generation have so reduced the dimensions of time and space as to necessitate an entirely new approach to problems of international relationships.

The United States, traditionally dedicated to a policy of isolationism during the period of national adolescence, has undergone a change in the pattern of its political philosophy, and today the principle of collective security in the community of free nations is the keystone of American foreign policy.

In accordance with this doctrine of interdependence, based on practical realism as well as a sense of moral obligation, the United States is joined in bilateral and multilateral agreements with some 42 countries in support of a crusade for permanent peace, social well-being, and freedom of opportunity.

The Southeast Asia Treaty Organization, ANZUS, the Organization of American States, and the North Atlantic Treaty Organization are representative of the family ties which bind the community of free people together in dedication to the principles of liberty, self-determination, and dignity of the individual.

Of these alliances, NATO is endowed with a particular significance. Because of its geographic characteristics Western Europe is of vital importance to the defense of North America in the strictest military sense. But in view of the cultural, political, and economic factors which are also involved—and the considerable accomplishments of NATO to date—it is indisputable that the continued, enduring, and positive success of NATO will inevitably provide a vigorous stimulant to the progress of free people everywhere.

The North Atlantic Treaty was signed on April 4, 1949, at Washington, D. C., while Europe was still struggling with the problems of postwar economic recovery, and as the threat of Communist aggression loomed ominously on the horizon. The Foreign Ministers of Belgium, Canada, Denmark, France, Iceland, Italy, Luxemburg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States affixed their signatures on behalf of their respective countries. Greece and Turkey were later invited to join the alliance, and formally took their place in the structure in 1952. When sovereignty was restored to West Germany in 1955, the Federal Republic of Germany joined the ranks of the West to complete the complement of 15 nations devoted to the preservation of peace and dedicated to moulding a better future through collective effort.

Purpose of the North Atlantic Treaty was never intended to be merely negative in its opposition to Communist aggression. In addition to proclaiming the military unity of its members, it aimed at the creation of a dynamic counter-attraction to Communism—the attraction of a free, prosperous, and progressive society as opposed to the totalitarianism of the Communist oligarchy. The treaty itself is a brief document as international agreements go. The basic text consists of 14 articles or paragraphs—several of them contain no more than four lines—which set forth the purpose, scope, and aims of the alliance.

Article 3 of the treaty provides that the parties shall separately and collectively develop the capacity to resist aggression in accordance with the rights of nations recognized in Article 51 of the United Nations Charter. Article 5 states that an attack against one is an attack against all. Article 9 provides for the creation of machinery to plan military defense and assist in other aspects of treaty obligations. Article 10 throws open the doors of membership to any European state which shares the ideals of the organization and which is willing to further the principles of the treaty.

North Atlantic Treaty Organization—the structure organized to implement the provisions of the agreement—is headed by the North Atlantic Council with official headquarters at the Palais de Chaillot in Paris. Each of the 15 member nations maintains a permanent representative on the council, and the body sits in continuous session at Paris. Since the council is essentially an association of governments, the Head of Government or ministers of cabinet rank may represent their respective nations as dictated by the agenda of affairs to be considered. President Eisenhower represented the United States at the Heads of Government meeting held at Paris in December, 1957. Similarly, Mr. John Foster Dulles, Secretary of State, spoke for the United States at the Spring Ministerial Meeting during which the Foreign Affairs Ministers of the 15 countries assembled at Copenhagen on May 5, 1958. Ministerial meetings are held two or three times each year, but the permanent representatives assemble once a week or oftener.

M. Paul Henri-Spaak of Belgium, Secretary General, is also Chairman of the North Atlantic Council and he is responsible for organizing the work of the group and for supervision of the International Staff Secretariat.

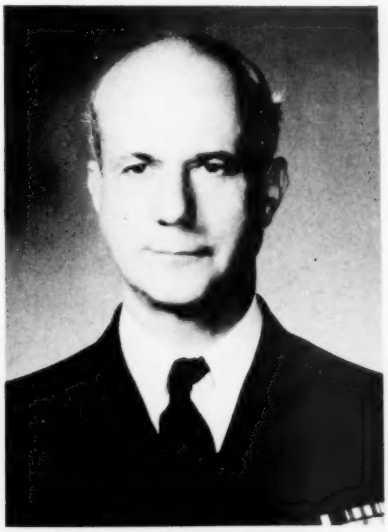
Since the objectives of NATO include goals in military and civilian areas its subordinate component organizations are devoted to a broad variety of interests in both avenues.

The Military Committee is the supreme military authority in NATO. It is organized at chief-of-staff level, and every member country is represented. In principle, General Nathan F. Twining, USAF, Chairman of the U. S. Joint Chiefs of Staff, represents the United States. The

Supreme Allied Commander Europe, General Norstad directs the Shield forces of NATO.

Adm. Walter F. Boone, USN, represents the United States on the NATO Standing Group.

Official U. S. Navy Photo



Adm. Jerauld Wright, USN, Supreme Allied Commander Atlantic, directs naval defenses.

Official U. S. Navy Photo

Military Committee meets at chief-of-staff level at least once a year and whenever important decisions must be made concerning an advisory opinion for the council or to consider changes in military policies and plans. In addition, the Military Committee meets in permanent session regularly in Washington. At these sessions the chiefs of staff are represented by specially appointed officers of general rank.

Executive body and working agency serving the Military Committee is the Standing Group, comprised of representatives of the Chiefs of Staff of the United States, France, and the United Kingdom. The Standing Group, in continuous session at Washington, D. C., is the superior body responsible for the highest strategic guidance in areas in which NATO forces operate, and, as such, it is the authority to which the NATO Supreme Commanders are responsible.

Strategic area covered by the North Atlantic Treaty is divided among three Supreme Commands and a Regional Planning Group. The three Supreme Commanders are responsible for the development of defense plans for their respective areas; for the determination of force requirements; and for the deployment and exercise of forces available to them. All the reports and recommendations of the Supreme Commanders are referred to the Standing Group.

Canada-United States Regional Planning Group is—as the name implies—a planning organization charged with study and definition of measures necessary for defense of the North American area. No forces are allocated to the planning group, but its conclusions and recommendations are submitted to the Military Committee through the Standing Group.

The three operational military commands in NATO are: the Channel Command, the Atlantic Ocean Command, and the European Command. The Channel Command is under direction of the Channel Committee comprised of the Chiefs of Naval Staff of Belgium, France, the Netherlands, and the United Kingdom. From its headquarters in Great Britain the Channel Command is responsible for the defense of the English Channel and the southern area of the North Sea.

Atlantic Ocean Command, with headquarters at Norfolk, Va., is primarily concerned with naval operations, although ground and air forces may be assigned to it for training purposes or in the event of war. The Supreme Allied Commander Atlantic (SACLANT), Admiral Jerauld Wright of the United States Navy, is responsible for the defense of an area extending from the North Pole to a line just a few degrees north of the Equator, and from the coastal waters of North America to the coast of Europe and Africa except for the area of the English Channel and the waters surrounding the British Isles. The defense of Iceland and the Azores, islands of major strategic importance to airpower, are included in the responsibilities assigned SACLANT.

Regular exercises employing land, sea, and air forces of the various NATO nations are conducted under the direction of SACLANT to test and develop techniques and procedures incident to defense. In *Operation Strike Back*, a typical maneuver carried out in the late fall of 1957, more than 150 vessels of all types and hundreds of aircraft participated. *Strike Back* was a six-nation, joint effort ranging over the North Atlantic as far east as Norway. *Sea Watch, Fend Off,* and *Sea Spray,* similar exercises in the same series, utilized other combinations of allied forces to demonstrate defensive capability.

Main force of the United States air and ground contribution to NATO defense is contained in the European Command. General Lauris Norstad, USAF, as Supreme Allied Commander Europe (SACEUR) is responsible for the defense of an area extending from the North Cape of

Norway to the coast of North Africa, and from the Atlantic Ocean to the eastern boundary of Turkey. Forces assigned or earmarked for Supreme Headquarters Allied Powers Europe (General Norstad's headquarters), include land, sea, or air units of every nation contributing to NATO defense. (While both Britain and Portugal contribute forces to NATO, defense of these home areas is a national responsibility.)

Like Admiral Wright, the Supreme Allied Commander Atlantic, General Norstad as SACEUR is authorized direct access to the Chiefs of Staff of NATO member countries and—if the occasion warrants—to the appropriate Ministers of Defense or Heads of Government.

It is NATO's international force of the European Command, guarding a front over 4,000-miles long, which General Norstad has repeatedly described as the "Shield" which protects the peace on the most sensitive political frontier in the world. (The position of U. S. Air Force units in the SHAPE structure is described in *The Edge of the Sword*, page 3 of this issue.)

The task of creating an integrated international military force—initiated by General Dwight D. Eisenhower as the first SACEUR in 1951—is obviously fraught with a host of impediments which could not possibly have been foreseen in advance. Custom, culture, nationalism, and the ubiquitous ogre of economics each play a part, and the regularity with which obstacles topple attests to the sincerity of purpose which inspires the alliance. The division of air defense areas, for example, between nations and forces proved to be unrealistic in the light of the tempo any military action of the future could be expected to assume. With the speed and altitude of modern aircraft any one European country is too small an area to be a self-contained air defense unit.

At a meeting held in 1955 the North Atlantic Council delegated to SACEUR authority to coordinate air defense plans for all the European countries of NATO. The SHAPE Air Defense Technical Center (SADTC) established as a result of this decision—and with special help from the Netherlands—is headed by 40 eminent scientists from 11 NATO countries. Tangible results of the work of SADTC are already evident in a program for construction of an efficient early warning network covering the Continent.

An additional example of scientific cooperation in NATO is the Advisory Group on Aeronautical Research and Development (AGARD) which was established in Paris in January, 1952. The objective of this group is to bring together leading aeronautical experts of the NATO nations with a view to recommending effective ways of utilizing their respective research and development personnel and facilities for the common benefit of the NATO community. At the Third Colloquium of AGARD, held at Palermo, Sicily, in March, 1958, prominent scientists from the United States, Great Britain, Italy, France, and Germany presented papers on current problems in combustion and propulsion.

In accordance with the concept that the NATO alliance transcends military considerations, the civilian side of the organization contains a large number of committees and

The Palais de Chaillot, overlooking the River Seine in Paris, is the permanent headquarters of the North Atlantic Council which meets here in continuous session.

Members of the staff of Atlantic Ocean Command render military honors to members of the North Atlantic Council visiting command headquarters near Norfolk, Va.

At Supreme Headquarters Allied Powers Europe, 12 miles west of the city of Paris, the foremost military minds of Europe and the United States plan mutual defense.

HMS Scorpion of Great Britain takes on fuel at sea during 19-day maneuver carried out under direction of the Atlantic Ocean Command, guardian of sea lanes to Europe.

working groups devoted to the study of political, economic, and social problems. The work of these committees helps to keep the 15 member nations constantly abreast of social influences and latest developments in industrial production.

One of the most effective methods employed in the promotion of mutual understanding and cooperation is The NATO Annual Review which enjoys the unanimous and enthusiastic approval of all member countries. The Annual Review is a continuous and comprehensive study of the defense efforts of the member states in the light of the political and economic capabilities of each. Never before has such a study been made in Europe year-after-year on an international basis. The amount of information which member governments exchange on political, military, and economic matters is greater and more detailed than allies have ever previously exchanged in peace or war.

The political unity and the spirit of mutual cooperation which exist in NATO have also enabled other economic, social, and cultural organizations to operate more effectively. The Organization for European Economic Cooperation brings together the NATO countries of central Europe and also includes Austria, Ireland, Sweden, and Switzerland, which are not members of NATO.

An atmosphere of political solidarity was an essential factor leading to the signing of the Paris Agreements between France and the Federal Republic of Germany in which cultural, economic, and other difficulties were resolved, including the problem of the Saar.

The European Coal and Steel Community calling for partial economic integration of the coal and steel industries; Euratom providing for collective development of atomic power; and the proposed European Common Market are ventures which could not possibly prosper without the spirit of unity which has been fostered and promoted by NATO.

Under the Common Market—more properly the European Economic and Customs Union—is a progressive customs union which has as its aim the elimination over a period of time of all obstacles to international trade between the countries of Europe. The Common Market will have its own bank, the European Investment Fund, which will finance common enterprises, modernize production, and assist the underdeveloped areas of the member countries. Eventually trade between the countries of Europe is expected to be as unencumbered as commerce between the various states of the United States.

Security is no longer a simple matter of ammunition and armor. NATO, as a revolutionary experiment in dynamic internationalism, points the way to permanent peace and security. The Shield of military preparedness and the Symbol of collective effort are essential to the preservation of a civilization founded on liberalism and individual initiative. These are the principles which must be safeguarded.

". . . That alliance forever seeks the security of each of its nations and of all the free world. Above all it seeks peace—peace with justice and with honor."

—December 14, 1957.

☆ ☆ ☆

". . . NATO has proved itself as an agency of peace. Since it came into being no further nation of Europe has been lost to Communist aggression. Behind the barrier of NATO's deterrent power, conventional and nuclear, the peoples of the West have made great advances. . . ."

—December 16, 1957

Dwight D. Eisenhower

CAROLINE ANTOINETTE

by M/Sgt. John J. Calvarese
Hq 3499th FTW

In 1813, the effects of the Revolution of 1789 were still being explored by the people of France and Napoleon was serving the spirit of the French people, while across the ocean the Louisiana Purchase—of which Colorado was a section—was American history by 10 years. During this year, the villagers of Mousseaux and those of the neighboring villages of Neuville and Neuvillette, small hamlets nestled in the fertile farmlands of Normandy, contributed their share to history when they elected to install a new bell in their community church at Neuville. The townspeople raised the funds, the bell forger was commissioned, and in the year 1813 an impressive 835-pound bell, 450 ounces of which were silver, was consecrated and installed in the gothic bell tower above the community vestry of Neuville. The bell was named Caroline Antoinette. In later years, the towns of Mosseaux and Neuvillette also acquired churches. After World War II, the villages' fathers and church officials debated the economy of maintaining three churches for the 265 parishioners remaining in the three towns. They decided to combine the three villages into one town called Mosseaux-Neuville and to consolidate religious activities into one church, the newest of the three, at Mousseaux.

The venerable time-and-war ravished church of Neuville was condemned to be torn down. The tired structure of that church was incongruous to the state of preservation of the century-old bell of Neuville, and although the arguments of several old established families were respectfully heard by the town officials, it was decided to sell the bell to another parish or institution which would be worthy of it. Hence, a search was conducted to discover an agency which would appreciate the significance of the bell and understand the symbolic meaning it had for the people of three villages.

They looked for someone who would listen and sympathize with the history of the bell; how it rang when the armies of the Holy Alliance finally retired from French soil in 1817; how it warned the parishioners of the advance of Bismarck's armies; how its toll served as the death knell of German aggression in 1918 and 1945; and how the villagers cheered the advancing American liberation army as it marched through Neuville in step to the rhythm of the bell chiming out its constant tone of freedom.

The bell had sustained the farmers of Mosseaux-Neuville in their need for spiritual guidance. It had served as a reminder that God will answer the call of those who desire freedom of worship and expression. Its strength had lain in the minds of men and women who held the principles of liberty, equality, and fraternity above those of self-privilege and worldly gains. For these reasons the inheritors of the tradition and message of the "Bell of Neuville" were so diligent in their selection of a buyer.

The fact that the church sold the bell does not detract from the purpose. Economic depression, breakdown in ecclesiastical methods of providing financial assistance to an impoverished parish, and the desire of the church to aid the poor and suffering in the community, prompted its sale rather than donation. It was purchased by Mr. Franklin G. Floete, the American General Services Administrator, and M. Paillet, a French engineer, and donated to Evreux-Fauville, the large American air base approximately 60 miles west of Paris.

It is not possible to measure the significance of such a decision by a group of French churchmen and patriots to permit a time-honored and highly revered object of local, if not national, pride to be placed in the custody of the United States Air Force. This was a gesture which cuts across time and stirs memories of Lafayette and the Statue of Liberty, and magnifies confidence in the bonds between the United States and France.

On August 13, 1957, the personnel of Evreux-Fauville collectively expressed their desire to donate Caroline Antoinette to the new chapel of the United States Air Force Academy at Colorado Springs, Colo. Col. Robert D. Forman, commander of Evreux-Fauville, sent a letter through channels to the Academy superintendent in which he made the donation proposal.

On November 8, 1957, the Air Force Academy accepted the huge old bell which now hangs in the tower of the Evreux-Fauville Air Base chapel. The bell will remain in the tower until the Academy moves to its permanent site at Colorado Springs.

Perhaps Caroline Antoinette's tones, echoing from the mountains, will sustain and strengthen the cadets in their dedication to defend and preserve freedom.

WEST GERMANY'S NEW AIR FORCE

After a dozen sterile nonflying years, the Luftwaffe is again taking to the air; but this time as a power for peace.

by Dave Karten

NOT long ago I sat in the Furstenfeldbruck Air Base commander's office talking with German Brig. Gen. Hannes Trautloft, training command chief, about the U. S. Air Force-trained young German *Luftwaffe* now getting ready to add its iron-crossed fighters to NATO's shield and sword.

The 46-year-old general is a story in his own right. He had gone to school with missileman Wernher von Braun near Weimar 30 years ago. He flew fighters with the Condor Legion in Spain, commanded a fighter wing on the Russian front, and evaded capture at war's end by hiding out in the Bavarian Alps. Now he and several hundred other old pilots of Goering's *Luftwaffe* were back, starting from scratch—trying to unlearn the methods they had used to fly *Messerschmitts* and *Focke-Wulfs* 18 years ago and learn U. S. Air Force dogma—that in flying there is one best way to do everything and everyone does it the same way.

Gray-uniformed, tanned, lean, and bright-eyed with the dream that gave Germany her reborn *Luftwaffe*, General Trautloft puffed on a black cigar and paced the mahogany-paneled office vacated by the Americans when we returned Furstenfeldbruck and the Bavarian complex of training bases to the Germans a few months ago. He spoke in fluent English.

"We've got growing pains—personnel and materiel shortages, antipathy to soldiering as a profession in Germany since World War II, qualified young men who prefer well paying jobs in industry to an air force career, and retread pilots too old for jets. But, despite these handicaps, we're slowly but surely forging a good air arm. When our air force is completed and modernized, we'll have our flight legs and make a formidable addition to NATO.

"What our old *Luftwaffe* retreads lack in youth they make up in spirit and dedication. One student insisted on attending refresher courses despite a high fever and yellow jaundice because he didn't want to miss anything. A rated NCO in the jet training program managed to conceal the fact that he wore contact lenses until after he had soloed for six hours."

How It Began

Today's German Air Force dates from May 27, 1952 when the European Defense Community treaty was signed at NATO headquarters in Paris. It coincided with the realization that no real defense of Europe was possible without inclusion of German forces. The treaty provided for these forces at the earliest possible date, although German sover-

Under supervision of M/Sgt. Fred Tucker (right), *Stabsunteroffizier* (A/1C) Herbt Kalnza checks F-84F landing gear during preflight inspection at Furstenfeldbruck.

eignty was still three years away.

Beginning in 1954 under the Mutual Defense Assistance Program, now the Military Assistance Program, USAFE operated a complex of training schools from Furstenfeldbruck. The schools provided jet pilot instructor classes at "Fursty," a piston-engine aircraft course at Landsberg, aircraft technicians' courses at Kaufbeuren, and supply at Erding. All were former *Luftwaffe* bases.

On January 3, 1956, just six months after Germany regained her sovereignty and joined NATO as the 15th and newest member, a German Military MDAP Training Group was established in three small offices of the base headquarters at Furstenfeldbruck, under command of German Lt. Col. Horst von Riesen, former commander of the *Luftwaffe's* 1st Bomber Wing in World War II.

"The Penta-Bonn"

In early recruiting the Bonn Defense Ministry (some Germans call it "The Penta-Bonn") concentrated on getting flying veterans with at least 1,500 hours and giving refresher courses at Furstenfeldbruck and Landsberg before assigning them for the most part to instructor duties.

The 350 old *Luftwaffe* heroes who came back to help start up the new air force retained their former rank. Many hadn't set foot in a plane since 1945 but a few had managed to fly "unofficially" in Swiss or Italian aero and glider clubs. Their flying experience ranged from 300 to 6,000 hours, their ages from 28 to 40. On May 22, 1956, the training began. Courses were in English because it is the universal langauage of the airways although many of the American instructors spoke German. They were first given refresher work in Harvard Mark IV (T-6) trainers at Landsberg, then advanced to T-33 jet trainers at "Fursty."

Four months later the first German Air Force class was graduated from a course comparable to one they would have received in the U. S., and every student was proud of his white USAF instrument card. Some became instructors, others joined F-84F training units in Germany or went to the U. S. for further training. Many retreads had to be restricted to flying prop-driven aircraft or administrative staff jobs.

Although USAFE ended courses for the Germans when it turned over the bases to the GAF, it continues to give training advice to the German Air Force. Says a member of the advisory team, "We try not to interfere with their operation unless assistance is specifically requested or we see that it's required."

Modern Technical School

Technical training for German personnel began at Kaufbeuren Air Base in March 1956. The technical school offered courses ranging from maintenance and electronics to intelligence and photo interpretation. The idea was for USAFE to provide technical training for the German Air Force, then train themselves out of a job by teaching GAF personnel to operate the school and base as soon as possible. This was done by assigning German officers and enlisted men to work with and for their USAF counterparts. The system was operated simultaneously with the program to train personnel as instructors. As soon as German Air Force personnel demonstrated reasonable proficiency and familiarity with the job, they were given additional responsibility for supervising operation of the training facility.

When the U. S. transferred the base to the Germans last November it was fully equipped and able to function effectively as a technical school. From August 1955 through March 1957 the school trained hundreds of German airmen in addition to several hundred other NATO students from Spain, Turkey, Denmark, the Netherlands, Norway, Portugal, and other countries.

Courses, schedules, and instructors available were assigned and evaluated just as in the U. S. It was literally an extension of the USAF Air Training Command. The program was so good, the German Air Force adopted it lock, stock, and *Bierfass* and made Kaufbeuren headquarters for its technical training command.

They Make Progress

In three years time numerous pilots passed light plane screening; primary training at Landsberg; instructor courses at Furstenfeldbruck; and some were approved by USAFE for operational training at Buechel Air Base, near Cochen on the Moselle River. At Furstenfeldbruck, over 100 graduated as T-33 jet pilots.

Simultaneously in the U. S. a few German pilots completed advance jet

U. S. Air Force-trained German fighter-bomber pilots in front of one of their Republic F-84F *Thunderstreaks* at Buechel Air Base, near Cochen, Germany.

flying training at Luke AFB, Ariz., after graduating from basic pilot training at Greenville AFB, Miss. More GAF student pilots are now being trained in the U. S. Other GAF officers and enlisted men are receiving training at U. S. bases in technical courses ranging from aircraft engine maintenance and air traffic control to electronics, weather, and aviation medicine.

The GAF Basic

Every airman in the fledgling *Luftwaffe* receives 15 weeks' basic training in one of four regiments. Officer candidates get an additional three months' training before attending OCS at Fassberg for six months (extension to nine months is planned). Next comes 20 hours of Piper L-18 training at Uetersen, near Hamburg. Here personnel suitable for flying training are selected. After 80 to 100 hours of T-6 instruction at Landsberg, it is decided whether the officer will fly a fighter, reconnaissance plane, or transport.

To date, over 1,000 GAF officers have been graduated from OCS at Fassberg. Basically, the requirement for an officer candidate is that he has completed his *Abitur* (an education equivalent to the first two years of college). The courses include science, math, tactics, leadership, and a good level of English. "In the first class," says Col. Rudolf Loytved-Hardegg, school commander, "we had many retreads; now we're getting younger fellows. Because there is a lack of qualified young men we have many noncommissioned officer pilots in our new air force. NCO pilots receive the same training, except for OCS. At present the German Air Force offers pilots 90 ($21.60) to 240 ($57.60) German marks per month flying pay.

"The present pay scale is inadequate to compete with civilian industry. This doesn't have too much effect on older personnel who are highly motivated, but for younger people who would make good officers, better pay would make a difference."

Fringe benefits in the GAF are mostly for the troops, not for dependents. There are no post exchanges or commissaries. The air force isn't permitted to negotiate concessions or establish such facilities on its own. The same problem exists with NCO or officer clubs. In the old *Luftwaffe* clubs were operated on a concession basis. The new GAF is now trying to solve this problem.

Free medical care is provided all military personnel in the dispensary at each base. Cases requiring hospitalization are sent to a civilian hospital. Dependents of military personnel have to avail themselves of civilian physicians but normally carry insurance.

Sports Emphasized

There is emphasis on sports—boxing, track, swimming, soccer, basketball, and recreational facilities (movie theaters and bowling alleys purchased from the USAF when we transferred the bases). Saturday mornings are reserved for "commander's call" type briefings.

Food in GAF messhalls is adequate; mediocre by American standards. Breakfast usually consists of bread or a roll, butter, jam, and *ersatz* (imitation) coffee. Like all Germans, GAF personnel eat their main meal at noon. Usually soup; a meat, egg, or vegetable dish; dessert; and coffee. For supper they have assorted cold cuts.

Airmen in the new air arm are trained on the basis of a "reasonable and voluntary" discipline. Violations requiring serious disciplinary action (trial) are referred to a civilian judge. Under existing procedure, the civilian judge has jurisdiction over the military. For instance, if it is felt that a man should be confined, the judge decides whether confinement is warranted.

The *Luftwaffe* Components

The new *Luftwaffe* will consist of a tactical command, which will work in close cooperation with Germany's other two services—the Army and Navy — and a defense command, whose primary task will be air defense of Western Germany. The tactical command will include fighter-bombers, reconnaissance aircraft, and transports. The first two transport squadrons were set up at the end of last year, the first fighter-bomber squadrons early this year. By 1960 it is expected formation of the tactical command will be completed except for minor details.

The F-84F *Thunderstreaks* and RF-84F *Thunderflashes* which Germany received from the U. S. were the first jets to bear the GAF insignia. Nine F-84F fighter-bomber squadrons to be activated before the end of the year will be the forerunners of a force

which by 1960 will be several times its present size.

In accordance with the Paris agreements, West Germany will have no strategic or bombing planes. All its wings will be incorporated into NATO defense planning. Those stationed in southern Germany are a part of Fourth Allied Tactical Air Force, along with U. S., French, and Canadian units. Those in northern Germany belong to Second Allied Tactical Air Force, which includes British, Dutch, and Belgian squadrons.

Faced with an approximately $20 million outlay for defense over the next few years the Germans have been cautiously studying lessons of the past in designing their military structure for the future. That's why control of all of Germany's new military forces is vested in the *Bundestag*, or lower house (comparable to U. S. House of Representatives). Franz Josef Strauss, the Minister of Defense, holds a position similar to the U. S. Secretary of Defense, and reports directly to the *Bundestag*. In peacetime, the defense minister has command and authority over all forces. In event of war this authority would be turned over to German Chancellor Konrad Adenauer, or whoever holds that office.

The New vs. Old

The new German Air Force will be only a pale shadow of the old *Luftwaffe*. With a firstline combat force of 3,750 planes and 1,500,000 men, the *Luftwaffe* was in 1939, for all practical purposes, an autonomous branch of the armed forces, coequal with other services. Almost all military aviation and air defense units were under its control.

For the time being the equipment picture of NATO's new air arm will remain largely foreign with Republic F-84F and RF-84F jets making up the backbone. However, the German aircraft industry is going into production on an impressive scale with many famous World War II names again in the limelight. *Messerschmitt* nd *Heinkel* plan to build the speedy French *Fougamagister* jet trainer. *Dornier* is turning out the DO-27 for training and reconnaissance. French *Noratlas* cargo craft and Italian P-147 light trainers are being built at Bremen. *Fokker* is back in business at the old stand.

Maj. Erich Hartmann (left), world's ranking ace, had 352 victories; Col. Johannes Steinhoff, over 100.

How Old Can You Jet?

Today, the strength of the West German Air Force includes an inordinately high percentage of World War II veterans, 38 to 42 years of age. "Rebuilding the *Bundeswehr* (Army, Navy, and Air Force)," explains General Trautloft, "was possible only if men with wartime service could be utilized. But this meant enlistees 20 years old at the end of the war, the very youngest officers and noncommissioned officers at the time, were 28 or more at time of reentry into service.

"For experienced technical personnel—instructors and staff people—there was little or no disadvantage in being over-age. There was actually some advantage due to their maturity and a dozen years experience in civilian occupations. However, this doesn't hold true for the pilot where age is a definite disadvantage. Because of their aviation savvy and wide range of experience, most ex-*Luftwaffe* retreads managed to pass the refresher courses (limited to the lower age groups among them) and earn their wings. But when it came to flying jets, well, as you Americans say, they just couldn't 'hack' it. There was the fatigue factor plus the fact that their reactions are too slow (especially among pilots who hadn't trained for 10 years) for modern high performance jet aircraft."

The refresher program is completed now. The training has progressed satisfactorily and there was a lower elimination rate than had been expected. Refresher pilots now constitute the nucleus of the new German Air Force. GAF officials hope that the over-age men who today form the core of experienced pilots will leaven the enthusiasm of the youngsters who will man the combat planes.

The Aces Are Back

Among these over-age oldtimers are some of the top *Luftwaffe* aces of World War II. Maj. Erich Hartmann, the world's ranking ace, had 352 confirmed victories. His greatest day was against the Russians when he shot down six in one mission and five the next day for a total of 11. He was the first man to pass the 300 mark and in the German records there is an account by his crewchief of his return that day. Hartmann, who was then a 23-year-old captain, buzzed the field to signify he had scored his 300th victory and then landed. His crew and fellow pilots handed him a glass of champagne as he raised the canopy, then carried him to his quarters for a victory celebration. Hartmann recently received his refresher training at Luke AFB.

In an instrument class at Furstenfeldbruck taking the examination to reinstate his white card, I met World War II *Luftwaffe* ace Maj. Guenther Barkhorn who now commands an F-84F Operational Training Unit. He and Hartmann were the only two members of the exclusive "300 Club" made up of *Luftwaffe* aces with 300 or more victories over enemy pilots. Another GAF retread, Lt. Col. Guenther Rall, had 275 victories in 800 combat missions. He was shot down several times, wounded three times.

A retread major named Walter Krupinski, who flew 1,000 ME-109 missions, scored 177 victories on the Russian front and now commands a GAF operational training F-84F wing at Buechel, succinctly summed up the status of the reborn German Air Force: "What we don't have," he said, "are the pink-cheeked young 'tigers' who serve as the real nucleus of any air force worth its salt. We hope to get them in the near future by making a career in the new *Luftwaffe* more attractive. When we get them, the German Air Force will come of age."

Lt. Gen. Josef Kammhuber (left), head of the new GAF, and Lt. Col. Horst Merkwitz are briefed on oxygen mask use prior to getting a ride in Lockheed F-104 *Starfighter* during recent visit to U. S.

GAF Boss

Lt. Gen. Josef Kammhuber who commands the German Air Force (with the title of "Inspector") has one ambition. He wants flying crews second to none. That's why training receives maximum emphasis in the new *Luftwaffe*.

The 62-year-old, three-star general began his flying career relatively late but compensated for it by extensive and thorough training. He served with the infantry during World War I, later joined the *Reichswehr*—the small army permitted Germany under the Versailles Treaty—learned to fly fighters and reconnaissance planes while serving with the General Staff.

General Kammhuber joined the Air Ministry in the middle 30s, was later put in charge of a fighter group. He was chief of *Luftwaffe* organization when he volunteered for a bomber crew and was trained in blind flying.

While serving as a wing commander during World War II, he was shot down over Paris and taken prisoner. Liberated after the French collapse, he took over organization of the *Luftwaffe* night-fighter force and commanded the newly formed XII Air Corps. At Kammhuber's prompting, West Germany's Defense Ministry persuaded parliament to include night fighters in the new air force procurement program.

During the latter part of World War II the general was relieved of his post several times because of clashes with Hitler. In 1943, he was sent to command the Fifth Air Force in north Norway and Finland. In 1944 he was put on inactive status. When the war was all but lost he was recalled in February 1945 to form a defense against Allied bombers which were pretty well roaming over Germany at will by then. He was a prisoner from June 1945 until December 1947; was named Chief of the German Air Force in June 1956.

General Kammhuber sees the German Air Force as part of a whole—the NATO command—and he is happy, he says, that there are other and friendly aircraft to fly by his side.

"The F-84Fs and RF-84Fs furnished us by the U. S. under the Military Assistance Program," he says, "will have to be renewed with something in the Mach 2 class along about 1960 or 1961, otherwise we shall be outdated. The rate at which supersonic aircraft can be procured will depend on the progress made in the training of our pilots. We are confident that by 1959 a sufficient number of pilots can be given the quality training required to handle today's high speed Century Series aircraft.

"What we buy will depend on the world situation and German needs at that time. We shall see what is offered on the world market and make a decision in the near future. In this way we can determine what is most suitable to Germany's requirements, making allowance for our geographical position. We don't like to come to hasty decisions which may later turn out to be wrong ones. In view of the rapid pace of recent technical developments and space technology, we want to be sure that what we introduce into the German Air Force won't be obsolescent in a few years' time. Our planning has to be flexible. Until a Mach 2-class all-weather interceptor fighter is introduced, we will rely on the *Sabre V* received from Canada and the *Sabre VI* we purchased for defense purposes. In any war the geographical location of the area to be protected is of vital importance. If we consider West Germany from the point of view of *air defense*, we find it is the nerve center of the European defense system. It lies directly against the iron curtain. Its average depth is not much more than can be covered by Mach 2 class enemy aircraft in about 7½ minutes. It is densely populated (more than 770 inhabitants per square mile), with highly concentrated industrial and economic resources, transport systems, military installations, etc.

"The question of what combination of weapons Germany should employ in view of its geographical location —interceptors, all-weather fighters, fighter-bombers, missiles—and what should be the ratio between the two types of weapons is now being examined in minute detail.

"Pilotless missiles and rockets will, needless to say, play an ever-increasing part in our defense. Three *Nike* battalions are presently being trained in the U. S. All our planning is aimed at the goal formulated by President Eisenhower, 'to win the next war by preventing it'."

FANS to STOVEPIPES

Cessna T-37, tagged "twin-stovepipes" by students, above is "cutting in" on the partnership of prop-driven T-34 (left) and T-28 (right).

Side-by-side seating in T-37 makes instruction and supervision easier and better. Instructor gets full reaction of student to high speed jet operation. Pair here is checking oxygen supply and radio equipment prior to takeoff.

Lt. Gen. Charles T. Myers, ATC commander, gives 2d Lt. W. D. Laemmel diploma. Others: Maj. Gen. Russ Spicer, FlyTAF commander and Lt. Col. E. L. Masters, base commander.

AIR TRAINING COMMAND recently announced successful completion of *Project Palm* at Bainbridge Air Base, Ga.

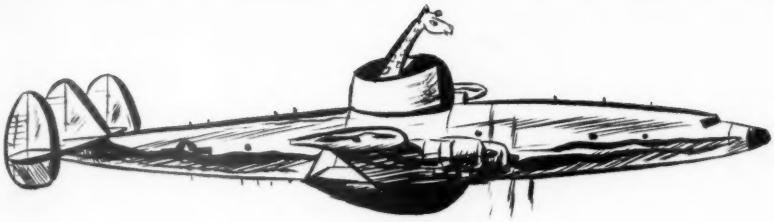
The project was an experiment in which student pilots pioneered the use of Cessna's T-37 twin-jet trainers. During primary training, students have been receiving 30 hours in the T-34 followed by 100 hours in a second and faster prop-driven trainer, the T-28. Primary flying training, coupled with academic instruction prepares student pilots for basic flying training.

"T-37 phase-in," explains Col. Charles Overstreet, Chief, Flying Training Division, DCS/P, Hqs USAF, "is the first step in the USAF Modernized Pilot Training Concept. Although time spent in training schools will not be materially changed, the quality of the graduate will be greatly increased. Eventually all student pilots will move from T-37s in primary to T-38s in basic, and on to Century Series aircraft in advanced training. Following this a pilot can move directly into high-performance aircraft of operational units. This will shorten the indoctrination time currently required to provide combat ready pilots for today's supersonic aircraft."

In the Bainbridge test, students entering the school last July received 30 hours in the T-34 and then went directly into the T-37 in which they spent 150 flying hours. From this test ATC will develop the curriculum necessary to prepare a trainee for the faster jets of basic.

Each student in the test class was highly motivated by the introduction to jets so early in training, and the class received higher than average grades in both flying and academic exercises. Indicative of the esprit de corps that existed in the group is the distinctive *Project Palm* shoulder patch which the students designed, had manufactured, and wore during the experiment.

According to the phase-in schedule, the class which entered Bainbridge on January 21 will use the T-37s, the next two will skip it with additional staggering until next July when all Bainbridge students will follow the T-34 to T-37 program. The other primary schools will follow a similar phase-in program. Graham Air Base has already received some of the Cessnas and according to present plans the other primary schools will acquire the T-37 in this order: Bartow, Moore, Spence, and Malden Air Bases. Complete T-37 phase-in is planned by the end of FY 1961.



The RC-121 *Super Constellation's* unique contour, distorted by the tall radar dome, prompted one humorist to observe it was the Air Force's only plane capable of carrying a standing giraffe.

SUPER CONNIE MISSION

From Washington to California the crews of the 552d Airborne Early Warning and Control Wing patrol 600 miles into the Pacific.

by T/Sgt. Bert Tavender, *Western Air Defense Force*

Illustrations by T/Sgt. John Trombetti

"What people don't realize is that this outfit's flying a wartime mission right now, and we're doing it daily!"

Had the rank been more parallel, and his tone less sincere, my rejoinder might well have been, "You're right, colonel, absolutely!" instead of the more formal, "Yes, sir."

The speaker was Col. Charles R. Heffner, commander, since last October, of the 552d Airborne Early Warning and Control Wing at McClellan AFB, Calif.

He was talking about his RC-121 *Super Constellation* crews and their 24-hour patrol of the west coast—as far as 600 nautical miles west over the Pacific, from upper Washington to southern California.

The colonel was a man warmed to his subject. He knew his wing and its mission. He knew its planes and its crews. He realized the scope and significance of its mission.

He had a commander's natural pride in achievement of mission, and a commander's natural concern that his men be recognized and appreciated.

For 10 days before this recent interview, your chairborne narrator had attached himself to a 552d airborne crew, an "outsider" looking in. By the time Colonel Heffner made this "wartime mission" appraisal, he was addressing a confirmed "insider."

Air Defense Command has two Airborne Early Warning and Control Wings; the 552d at McClellan, patrolling the Pacific, and the 551st at Otis AFB, Mass., guarding the Atlantic. The two wings are equipped with RC-121 *Super Constellations,* labelled "flying radar stations."

There are six AEW&C squadrons in the two wings—the 960th, 961st, and 962d on the east coast; the 963rd, 964th, and 965th at McClellan. Their planes are in the air around the clock.

The mission is "to provide airborne early warning and control in the Air Defense Identification Zone."

The 552d was activated in October 1953, as the 4701st AEW&C Squadron. Since that time, it has flown more than 25 million miles and over 125 thousand hours.

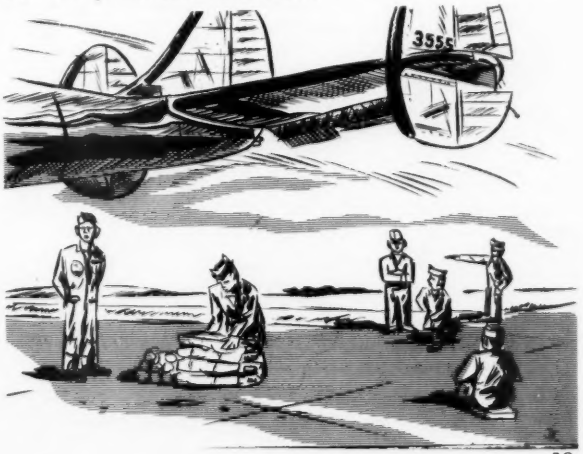
And even with missions stretching from 12 to 16 hours, the figure translates into an impressive number.

What about the crews?

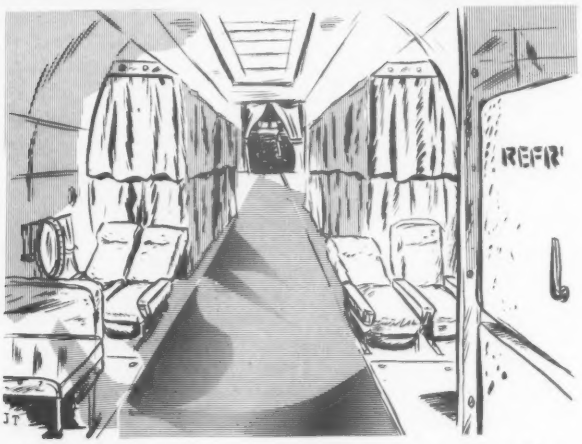
Meet Baker Two crew of the 965th Airborne Early Warning and Control Squadron, chosen at random. The 965th, according to its commander, Lt. Col. Charles S. Reed, was the last squadron activated, "but has been first in everything since."

It wasn't that Colonel Reed held any disparaging opinions of the 963rd and 964th squadrons, simply that he had a very high regard for his own. "It's an outstanding squadron, and I'm proud of it. We have some of the finest officers and NCOs in the Air Force in our key positions, and that makes an outstanding outfit."

It is amusing to note that in dining hall and NCO Open Mess discussions, there are seldom arguments on the merit of one crew or squadron over another. It appears the individual realizes his is the best crew and the best squadron, so why disillusion the others.



Preflight activity includes a last-minute smoke before takeoff. It may be an hour from the time the food and survival gear are loaded before the plane is actually airborne.



After takeoff, the *Super Constellation's* interior resembles a Pullman sleeping car, seats converted into curtained bunks.

Baker Two assembled in the squadron briefing room at 10 minutes past midnight on a Friday.

The briefing officer announced the "station." These vary from one to four hours' distance. There is always a suspense regarding the station—mission time is eight hours on station, plus time out and back.

Baker Two draws the farthest station. Weather enroute and on station is rough, and will remain that way. At best, this mission will be 15 hours, probably more.

The aircraft commander, 37-year-old Capt. Leslie M. Lewis, took over the briefing. "Airmen Day and Twedt on fleet service; Airmen Peer and Schmidt on survival gear." These are routine details, rotated among the crew from mission to mission. Fleet service is for foil-packaged meals, milk, coffee, water, and juices. Survival gear includes parachutes, Mae Wests, and survival suits for each crewman.

Captain Lewis glanced at his watch, "We take off at 0130, the weather will slow us some." He studied a sheet of paper on the podium in front of him. "Don't forget to log these training forms. I'll initial them at debriefing." His command of the crew is not limited to flying time; it's his crew all the way.

Without looking up, he shot a question to one of the radarmen—18-year-old A/3C Donald K. Peer—"What do you do when you hear three short rings?" Peer automatically recited the ditching procedure.

Sometime on each mission, the crew dry runs a ditching or "abandon aircraft" procedure. It's part of the routine, something of a nuisance. But it pays off.

On March 22, an 18-man crew of the 964th Squadron, forced to crashland four minutes after takeoff, escaped with only four men injured. It was a controlled crash-landing, and every man knew his exit route. The dry runs seemed less a nuisance afterwards.

Captain Lewis ended the briefing with an expectant, "Any questions?"

The crew sat silent, individually mulling over the upcoming mission. One could almost read their minds, could sense that point of reflection when each reasoned to himself, "That's the way the ball bounces," shrugged or raised an eyebrow, then looked to the AC for the word to move out.

Before the captain could say, "Let's go," there was a single question. "Sir, can we get something besides pineapple juice?" There was a flurry of assent.

Baker Two moved out to its aircraft.

The *Super Constellation* is a monstrous thing, its hugeness stressed by the addition of a tall, shark-fin radar dome on top its fuselage about midsection—a stubborn and contrary defection from normal contour.

This unique profile prompted one observer to reason the RC-121 could carry a standing giraffe—and it could, were the radome emptied.

Preflight activity was an organized melee. Captain Lewis apologized for the apparent lack of a "by-the-numbers" routine. He explained that each crewman knew his job and got to it. The crew were long enough a team to know the loose ends, to collect them, and to get the plane packaged for takeoff.

The first indication of discipline came with the aircraft commander's announcement that he was ready to turn over the engines. In seconds, every crewman was in his takeoff position, and strapped down.

In the cockpit, at this stage, a very definite "by-the-numbers" routine was practiced. Captain Lewis; his copilot, Capt. Walter R. Simonson; and the flight engineer, T Sgt. Fred L. Hart, ran through takeoff procedure —checking each other. There were no loose ends here.

Airborne and enroute to station, activities settled to a routine. Navigators, Capt. Daleman C. Riley and 1st Lt. Derrill R. Delk, conferred on mission route and mutually decided their shifts.

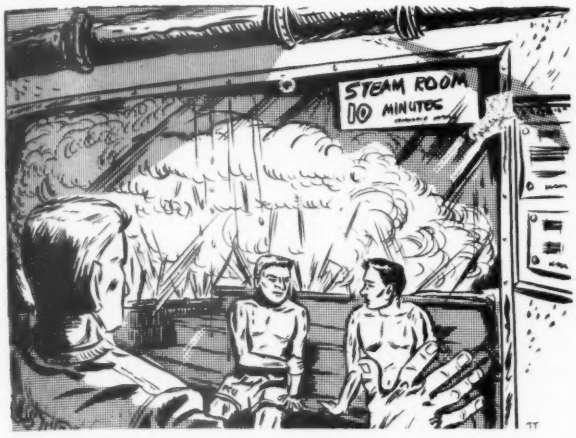
Intercept director, Capt. Earl M. Tigner, and radar crew chief, S Sgt. Edwin C. Walker, checked out the radar gear, posted their six-man crew, and established contact with the ground station which would receive their trackings.

The radar operators were Airmen First Class Homer D. Mitchum and Jerry K. Day, Airmen Second Class Jerry L. Schmidt and Edward Twedt, and Airmen Third Class Peer and John A. Hester. The six alternated hourly on the scopes, the plotting board, and the recording station—one of them on break every hour.

Nearly four hours after takeoff, after a crisscross pattern around storms, Baker Two was on station.

From the gallery, located midway of the fuselage, the

Looking forward from the tail section one sees two radar operators at their scopes, the plotting man laying out a grid section, and the intercept director monitoring trackings.



A physical conditioning unit, complete with steam bath, handball and squash courts, gymnasium, and masseurs, provides one means of keeping fit.

interior in either direction resembled a Pullman sleeping car. Seats were converted to comfortable beds, curtains buttoned to close out light and activity.

The galley was the center of all activity. It is a compact, adequate facility featuring a refrigerator for frozen meals, milk, and juices; a coffee urn; and ovens for heating the meals. Every man was his own chef, though the radar crew tended to watch over the cockpit gang.

On station, the RC-121 patrolled a north-south, south-north pattern at pre-established distances and times in either direction. A feature of airborne AEW&C planes is the high-low variance potential.

The navigator dictated route and speeds in accordance with pre-takeoff instructions. All *Super Constellations* on the numerous stations complement each other, leaving no blind spots in the system. This keeps the slide rule navigators at their desk.

In the radar section of the plane, three scopes were operated at varied distances and altitudes. As the individual operator spotted a moving object on his scope, he passed its altitude, speed, and route to the recorder and plotting board. It was marked on the plotting board and its progress charted frequently.

The intercept director passed the information to a land-based aircraft control and warning site, which had flight plans on scheduled planes approaching the United States from the west.

In a matter of seconds, the land-based operators were able to determine if the reported tracking was a scheduled flight. Had this identification not been established, the land-based operators could scramble Air Defense Command interceptors to make visual identification—or to destroy the approaching plane were it an enemy.

Sometime about midway of the mission, the copilot relieved Sergeant Hart at the engineer's panel. Captain Lewis took control of the plane. Captain Riley took over the navigator's slot. M Sgt. Robert W. Sanders, cross-training from the electronics countermeasures field to radar, keeping his 13 years' service in pace with Air Force progress, spelled Sergeant Walker as radar crew chief.

Airman Schmidt, radio operator retrained to radar, relieved A 1C William Mathein, the crew's radio man.

The changes came at intervals, and were the results of mutual agreements. Teamwork keeps the crew alert and the plane on patrol.

Before Captain Lewis returned to his pilot's seat, he discussed the AEW&C mission. He spoke with authority and confidence of the plane's ability to provide early warning.

"I really shook a civilian friend recently," he recalled. "I told him our basic mission and added that we hoped to give the west coast even 20 minutes advance warning of an enemy attack.

"Maybe I stretched a point or two," the command pilot grinned, "but that is our mission—to alert the west coast —and it's a man-sized job."

Captain Lewis felt his crew was too close to its mission to appreciate the importance of their role. "It's a pretty monotonous routine," he observed, then prophesied, "but like the dry runs, when the time comes, it'll work out."

Nearly 16 hours after takeoff, Baker Two returned to McClellan. It was a tired crew.

At debriefing, Captain Lewis ran over the crew's schedule. Crew rest on Saturday. Next mission Sunday night, briefing at 2130. Crew rest on Monday. Squadron detail and dormitory cleanup on Tuesday. Briefing at 10 past midnight Tuesday for a Wednesday mission.

"Any questions?"

There was a general negative nodding of heads, a single question from the corner of the room—"Sir, can we get something besides tomato juice next trip?"

And so it goes.

Day in, day out, around the clock. *Super Constellations* with 16-man crews and nearly six tons of radar equipment, patrolling the Atlantic and Pacific coastlines.

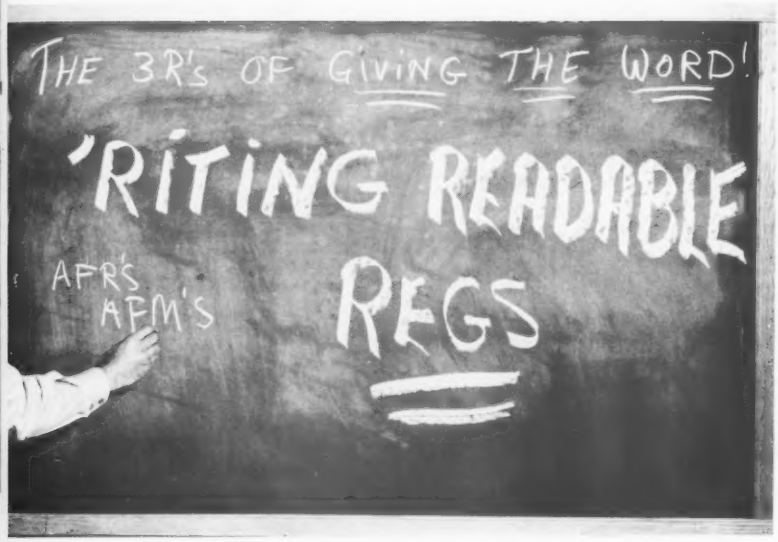
Baker Two, no more than any AEW&C crew, isn't limited to these missions, it's just part of the job.

Baker Two averages more than 60 hours a week on duty, and that is a most conservative figure. In a three-month period, Baker Two totalled 258:20 hours flying time, accomplished over a thousand hours between them in ground training, spent 72 hours each on squadron detail, and were 288 hours on alert—on 30-minute call, which eliminates a dinner downtown or an off-base movie.

Begging the wing commander's indulgence, as regards "flying a wartime mission right now . . ."

You're right, colonel, absolutely!

The galley is located midway of the fuselage. A modern kitchenette and dining table add much to crew comfort.



BEFORE READABLE WRITING

1. Purpose and Scope: The purpose of this regulation is to establish policy under which contract technical service personnel, hereafter referred to as "Tech Reps," will be obtained and utilized to achieve MDA objectives and to delegate authority, assign responsibility, and define procedures governing programming, procurement, assignment, and administration of contract technical assistance in support of MDA program . . .

AFTER

***Purpose:* This regulation tells how to obtain contract technical service personnel for the Air Force Military Assistance Program (MAP), and outlines policies governing these personnel while they are under contract . . .**

by M/Sgt. Paul J. Turner
Airman Staff

"THE spoken word perishes; the written word remains."

This ancient Latin proverb has survived time and still explains why leaders, in directing people, have written orders, policies, laws, regulations —by any name expressions of authority in military or civilian circles.

Air Force headquarters maintains over two dozen different types of publications. Regulations alone number more than 1,500 (averaging four pages each); and manuals, numbered letters, and pamphlets add over 700 additional publications. Hundreds of thousands of words in these documents provide information and direction to the worldwide Air Force effort. To supervisors such written words provide a means of standardizing policy and direction of activity; to others they give daily guidance and information.

Getting Technical

Air Service pilots in 1919 were flying their "flivvers" in a state of confusion because the rush of WW I had prevented leaders from establishing standardized rules for flying. Each station CO made his own rules and in flying from one base to another, a pilot could literally break "every rule in the book." In January 1920 order came to this confusion when the Air Service announced published rules for all flying fields.

Among other things pilots were told:

"Never wear glass goggles and never fly without goggles and helmet. Handkerchiefs should be carried in a handy position in order that goggles may be wiped off . . ."

Hot-rodders of the era were cautioned: "No plane will taxy (sic) faster than a man can walk . . ."

Pilots were clearly instructed: "If engine fails on take off, land straight ahead, regardless of obstacles."

But aviation has moved from the flivver to the missile era with equipment becoming increasingly complex. At the same time our directives have become correspondingly complex. For some time now there has been a concentrated effort to reduce the number of Air Force publications and to make each easily understood. The program is carried out in the new Directorate of Administrative Services (formerly the Office of the Air Adjutant General).

Planting the Seed

Many factors germinate the need for new or revised directives in an ever-changing structure embracing hundreds of thousands of men and countless thousands of pieces of hardware. In many cases an item of new equipment demands directives on its use, personnel to man it, bases to house it, and on down the line. A single new concept may require revision of many existing directives. Personnel problems can only be solved by changing existing programs to conform to new and anticipated needs.

New directives, revisions to existing ones, or recisions, may come from a number of sources. Often they start from a recommendation at an air base. In such cases they could stem from an airman's suggestion or an operational need. Major commands too may request modification or addition to our "library" of publications. In all cases the need is referred to Hq USAF where it is placed in the hands of the Air Staff agency of primary concern, labeled the "office of primary interest" or OPI. AFR 0-2, the Publications Index, gives the office symbol for the OPI of each listed publication. More often than not the OPI or some other Hq USAF agency starts action to create, change, or do away with a publication. In all cases the OPI assigns a man as the project officer for the publication need. He is responsible to draft the needed information and forward this draft to the Publishing Division of the DAS.

In the next step in constructing a publication, the project officer's draft is reviewed by a professional writer, part of a team charged with making all regulations readable—that is, phrased so that each sentence is clearly understood after one reading.

Aristotle once counseled, ". . . speak as the common people do, think as

wise men do." This is the intent of the readable-writing group as they screen each new directive. Meanings must be clear while the accuracy and intent of the message remain intact. Often their work may require only minor corrections or changes to the OPI's draft. In other cases paragraphs, or even complete regulations, may be rewritten. Of initial concern is the essentiality of the directive. If there is an existing directive on the subject that can incorporate the data with minor changes, this is done to reduce the total number of Air Force publications.

In this readable-writing process new approaches have been made to organization of material. The "old school" use of Purpose, Scope, Definitions, Procedures, General, Miscellaneous, and similar subdivisions has given way to frequent use of the journalistic 5 Ws and an H—who, what, why, when, where, and how. In one case a writer headed the responsibilities paragraph *Who Does What.* An example of what readable writing can accomplish is shown in the before-and-after of a sentence reviewed in a reg on Tech Reps (see box).

In rewriting or changing the draft, the writer works closely with the project officer to insure that technical accuracy is not lost. The end product of their labor is tagged a final draft. This goes back to the OPI which sends it to each Air Staff office that might have an interest in the contents. Each of these must review and coordinate the draft before it is sent back to the Publishing Division.

Procedures for printing approved directives have been streamlined to the point where an average regulation is less than 72 hours in moving from approved final draft to thousands of copies ready for shipment to the field. These copies are rushed from the printer to the publications depot in Ohio which makes initial ZI distribution within 16 working hours of receipt. Advance copies are forwarded to overseas areas where local reproduction is often authorized as a time and money saver.

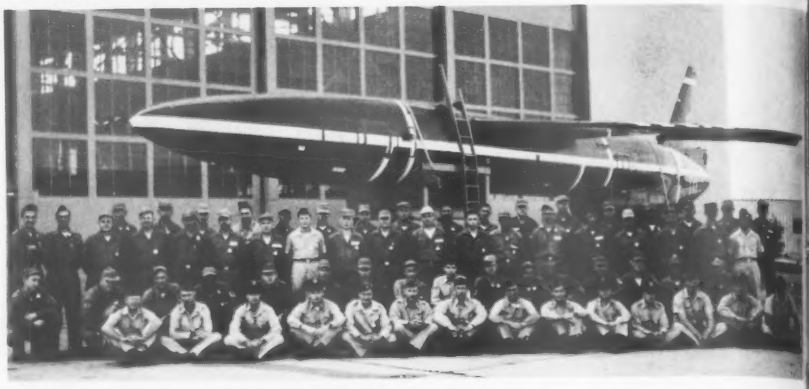
A new system of distribution was conceived last year and is currently in operation for all Air Force Manuals. In this operation, announcement is made of a forthcoming manual 60 days prior to its availability. Units submit their requirements for the manual to base Publications Distribution Officers (PDOs) who in turn consolidate the requests and forward them to the publications depot. Once all the PDO requests are in, the depot can advise Hq USAF how many copies of the particular manual are needed. Among advantages derived from the PDO system are that units receive only those documents which they feel they need since they order each, and in many cases reduced requirements give greater economy to the printing program.

Pilots were clearly instructed: "If engine fails on take-off, land straight ahead, regardless of obstacles."

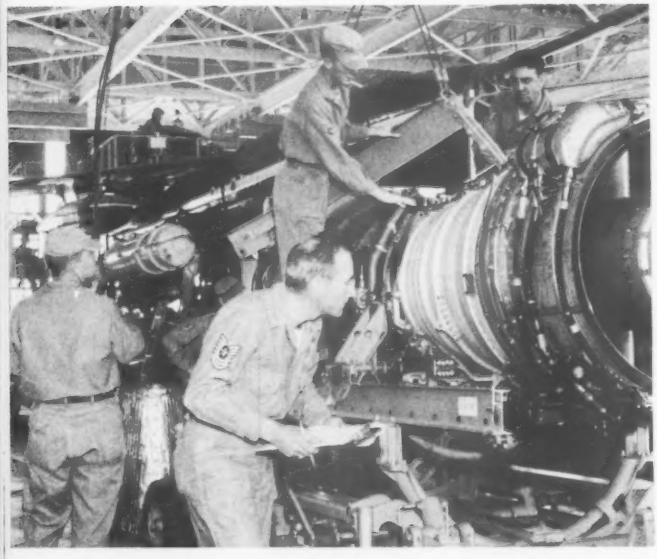
Not all publications are perfect. Despite the efforts of the readable-writing project, portions of some publications may not be understood. In other cases contradictions or inaccuracies may creep in due to the volume of publications needed. Where directives conflict, that having the most recent date takes precedence. Publications are under constant review in an obsolescence program. Under it, each publication is given an annual screening if it is more than two years old to ascertain current status and applicability of provisions. Airmen in the field, as well as major air commands and operating units, may likewise suggest changes to or elimination of publications at any time by merely forwarding information through channels to the office of primary interest.

Throughout the world, airmen, regardless of the type unit to which assigned or the work each performs, are bound together in the single effort of national security through standardized direction and information found in Air Force publications. These are under constant scrutiny to give the word—ungarbled.

THE MAN a



Airmen are in training at Patrick AFB and Cape Canaveral, Fla., to form the "cadre" of the Air Force's first intercontinental guided missile squadron, the 556th. They will move to Presque Isle AFB, Maine, when the new 12-million-dollar missile site is finished.



↑ In the training program "spent" birds are recovered. During
A 2C L. Eppley and A/1C L. Kuehl are adjusting the eral, A
front landing stut on this *Snark*. Present cadre personnel wi the mis
train others joining the squadron.

←
Four SAC airmen, M/Sgt. Augustine Valle, M/Sgt. D. Watts, A/1C OJT is
L. Kuehl, and S/Sgt. Sidney Sanders make a thorough check of a import
new engine before it is installed in a missile. This cadre of 7 Smith i
SAC volunteers will mushroom to full squadron strength of 740.

Snark's guidance system comes under the close scrutiny of M Sgt. Fred King who uses a guidance analyzer simulator in missile checkout. The SM-62 features a self-contained and highly accurate automatic guidance system which can guide it across oceans at high speed.

Pushbutton warfare still requires many skilled hands. →
A 2C Richard McCarthy and S/Sgt. Donald Roper check the flight control on the integrated system tests in preparing a *Snark* for flight.

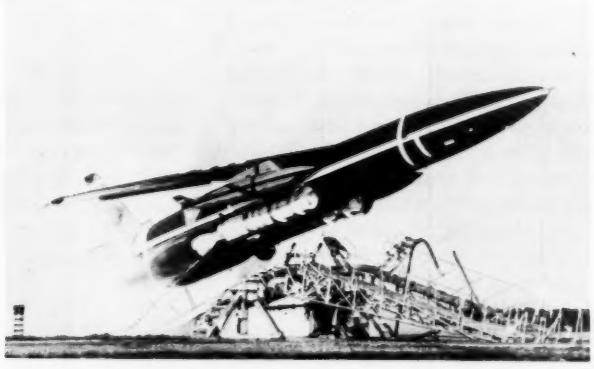
...d THE BIRD

Photos by A/1C William L. DeSandis, Orlando AFB, Fla.

Snark maintenance goes on around the clock in the training program conducted by Northrop, builder of the *Snark*. M/Sgt. G. Himmel, S/Sgt. Sidney Sanders, and M/Sgt. Lester Witherspoon are removing and replacing parts in the aft section.

During a *Snark* preflight prior to test-firing at Cape Canaveral, A/2C Thomas Conner adjusts a jetavator cylinder on the missile's booster. Headset and mike keep him in touch with other members of the preflight team. ↑

→ OJT is essential in the current training program and will play an important role in future squadron operations. M/Sgt. Elwood Smith is explaining to guidance technicians and analysts how the *Snark* electrically relays its position during flight.



Efforts of the missile trainees, commanded by Col. Richard Beck, pay off as a long-range *Snark* leaves its launching pad at the Air Force Missile Test Center.

← Climax of hours of preparation comes during the missile count-down. Capt. Daniel Hyde observes a Cape Canaveral count-down from his desk in the blockhouse.

the story of AIR MATERIEL COMMAND

A tube from the tiny tire of a helicopter is dwarfed by one from the tire of a *Globemaster*. Personnel at Kelly AFB., Tex., repair tires of every size.

Up near the North Pole is a floating ice cake named T-3. Last June it was 300 miles from the pole and 120 miles northwest of Ellesmere Island, which in turn is northwest of Greenland.

It isn't a place "to get away from it all." It's only nine miles long, five miles wide, and up to 150 feet above sea level. However, it is home to 10 airmen and two scientists who are making observations during the International Geophysical Year. T-3 has a runway constructed by dynamiting the ice and Air Force C-124 *Globemasters* fly in supplies—when they can. They are plagued on landing and takeoff by the fog and "white out." On T-3 last June was a downed C-124, its nose landing gear severely damaged.

A message was radioed to Air Materiel Command for help. Joseph Skishalley and Henry Hollenbach, two Middletown (Pa.) Air Materiel Area technicians, flew in to determine what repairs were needed to get the crippled plane back under its own power to Thule, Greenland. They found the temperature at 15 degrees below zero, even though the sun was shining 24 hours a day.

As more equipment and technicians were needed to make the repair, the men from MAAMA returned home.

Back at San Bernardino, Calif., was another *Globemaster*—the *State of Washington*. It had been disabled a few months earlier on Ross Island—600 miles from the South Pole. Air Materiel Command technicians had been flown in to repair it at that time.

Now it was the *State of Washington's* turn to give aid. Off to T-3 it flew with a load of men and equipment to do the job. Unfortunately the T-3 runway was not in condition for landing, and the big plane had to stop at Eureka, 300 miles away. The technicians were flown to T-3 by helicopter and received their supplies and equipment by paradrop.

Two of the crew, and a third man already on T-3, had been on the earlier South Pole mission. Thus three AMC employees, Raymond Chittenden, Paul Janeway, and Cecil McPeters, moved from pole to pole in eight months.

This was just part of their job. Air Materiel Command has logistical responsibilities for Air Force planes from drawing board to surplus sale. Wherever one is down—North or South Pole, Europe or the Pacific—AMC moves in like a brood eagle to prod its charge back into serviceable flight.

This is, of course, only one part of the picture of AMC at work. It is one aspect of a huge operation of which most airmen are rarely conscious, though the logistical mission pervades their whole service existence. The planes they fly, the equipment with which they work, the food they eat, and the clothes they wear are the concern of Air Materiel Command.

AMC's Mission

Stripped to the bone, the mission of AMC is to buy, supply, transport, and repair equipment for the Air Force, do it fast and economically, and insure that there is enough of the right kind of equipment at the right place at the right time.

The command furnishes aircraft, missiles, and related equipment for the "using" commands, including Strategic Air Command, Tactical Air Command, Air Defense Command, Alaskan Air Command, the U. S. Air Forces in Europe, and the Pacific Air Forces, as well as for the 30-odd nations in the Mutual Assistance Program. It ties together the functions of procurement, production, supply, maintenance, quality control, transportation, packaging, materiels handling, cataloging, and disposal. It determines Air Force supply requirements.

The AMC mission is a key factor in the long and difficult process of converting the national resources into superior military airpower. Its procurement, supply, and maintenance operations provide a vital logistic link between Air Force research and development and combat units.

The job is of staggering size and complexity. It involves billions of dollars, thousands of airplanes, 1,400,000 different kinds of supply items, and nearly 205,000 people—the population of a medium-sized city.

Organizationally the command follows traditional military lines although it is staffed by nearly seven times as many civilian as military personnel. Headquarters are at Wright-Patterson AFB, Ohio, close to ARDC's Wright Air Development Center, with which the command

Electronic repairman of Rome Air Force Depot's Directorate of Maintenance Engineering adjusts wave guide and performs klystron mode pattern test on a microwave link.

works closely. The field organization consists of an operationally decentralized network of 13 Air Materiel Areas in the ZI, European, and Pacific theaters; 17 air procurement districts within the United States; and various specialized units, storage sites, logistics terminals, and plant representatives at key points in industry.

It has taken years of effort to revamp logistic services to their present efficiency. The usual order of supply business—infested with time-consuming routines involving mountains of paperwork—had not changed very much at the time our country entered the Korean conflict. In 1776, ordering supplies by messenger and getting them delivered by wagon averaged 1.3 miles an hour. By the end of World War II, that average had been increased to only 3.5 miles an hour. Unfortunately, although jets were traveling at supersonic speeds, supplies continued moving by surface transportation and crossed the ocean usually in slow freighters.

This was intolerable in an age of supersonic aircraft. A way had to be found to speed up the whole cycle, including the ordering process; as much as six weeks were sometimes required for requisitions to reach AMC depots from overseas.

Logistics System Revamped

In 1951, with all of the military, industrial, and management resources available to it, the AMC staff, directed by its new commander, Gen. E. W. Rawlings, began revamping the logistics system to bring it into line with jet-age airpower. It was clear that the outcome of any future airwar would be largely determined by the massive blows and counterblows of its initial phases. The only chance of victory lay in readiness at all times. And logistics—fast, flexible, and precise (the right thing at the right place, in time)—would be a major factor in total readiness.

First came cargo airlift. AMC set up its Logair system, a scheduled cargo airlift between stateside depots and aerial ports of embarkation operated under commercial contract. Logair has now expanded to more than 50 airlift focal points within the United States. Military Air Transport Service has the job of airlifting supplies overseas. Its facilities are augmented by commercial airlift across the oceans, and by contract service between overseas points.

Then came the transceiver system. No longer does the supply officer fill out requisitions and send them through channels from overseas by mail—often by slow freighter. Instead, he uses the transceiver, and within a few hours his order reaches the depot in the United States where the supplies he needs are stored.

A transceiver is a small machine about the size of a typewriter. It works like this:

At Itazuke AFB on Kyushu, Japan, the supply officer needs a dozen left-handed widgets. He sends an order over the local transceiver. The machine produces a punched card that gives exact details of the order. The signals, carried over telephone lines, simultaneously punch out a similar card on a transceiver at AMC's Northern Air Materiel Area at Tachikawa, Japan.

The order goes no farther if Tachikawa has the widgets in stock. Otherwise, Itazuke's order goes by radio to the states. Ten orders a minute can be carried by land lines, and five by radio. The order is received at the Pacific Gateway Station at Sacramento. From there it goes by telephone wire again to the Transceiver Control Station at Tulsa, Okla., where it is taken off the transmitter and put into a high-speed sorter, to determine to what depot it should go. Then it is put back in a transceiver and sent to the depot that has left-handed widgets, where another machine duplicates the original punch card. In just a few hours—sometimes even in minutes—the AMC depot receives the order.

The combination of cargo airlift and transceivers has reduced pipeline time for priority items—from the date of the requisition until the order is received—to an average of 13 days at overseas points. This is in contrast to the three to six months consumed in previous methods.

Transceivers and cargo airlift are only part of the story of the innovations implemented in recent years.

Data Processing

The efficiency of transceivers is duplicated by electronic machines in the job of data processing. This is the paperwork area, the big part of the iceberg that is not apparent to the surface viewer. Beneath the whole "top layer" of the procurement and supply functions lies the basic task of programming for continuous future support. It involves ordering complex equipment which often requires years of lead time; planning spare and replacement parts for new weapon systems not yet off the production line; and translating future materiel requirements to budget blueprints. This is in addition to the whole communications and data-processing chain of events, from preparation and transmission of the requisition, to all of the paperwork incidental to inventory control and final shipment.

AMC's electronic data-processing systems bring phenomenal speed and precision to this enormous task.

AMC installed its first large-scale computer, a UNIVAC, at its headquarters in May 1954. Today its program of electronic assistance to management is one of the most ambitious

Pure silver bars reclaimed at Sacramento AMA are removed from a safe under armed guard. The process returns metal worth over $63,000 a year to the Air Force.

in the United States. Already, large-scale electronic computers have been installed at seven AMC depots in addition to the headquarters, and by the end of FY '59, similar equipment is planned for nearly all the remaining AMC depots in the United States. One depot, Oklahoma City Air Materiel Area, has two large-scale computers.

What will this equipment do? Its primary purpose is to provide a high-speed, highly flexible, and dynamic data-flow system that will aid in keeping combat effectiveness at peak level at lowest possible cost.

The new devices can greatly reduce paperwork and time for flow of information. Today, for example, it is possible to state with a much improved degree of timeliness and accuracy how many airplane engines of a certain type are in the Air Force worldwide inventory, just where they are, and what shape they are in.

This information is used primarily for close control of the distribution of these high-cost items and to estimate future requirements, making possible more economical buying. Knowing how many engines are on hand and how long they can be expected to last, supply managers can reach a realistic figure of how many more are needed. The data as to how long they will last is supplied by actuarial tables—"life-expectancy" tables on aircraft engines similar to those used by life insurance companies.

Simultaneously, this same data is used to figure out what will be needed for overhauling engines and how many spare parts for the engines will be required. It is believed that the reduction in costs achieved in these fields alone runs into many millions of dollars.

Thus, although the main object of using electronic data-processing equipment has been to secure maximum combat support, AMC management is convinced that the machines are more than earning their way in reduced inventory requirements.

In addition, the machines are expected eventually to more than pay their own way in personnel costs through reduced clerical requirements.

The STAR Project

Another change that has speeded up supplies is a project called STAR —Support Through Aerial Resupply. Actually, under other titles, STAR has been operating on a test basis for several years; but now it is in full swing.

The STAR system is based on a "flyaway kit" containing all supplies, including plane parts, needed by a squadron for 30 days. As parts are needed, they are obtained from the kit, and an order for a similar part is sent back by transceiver to the U. S. depot. Usually, in about 10 days the new part reaches the squadron.

The new support concept may be expanded to include missiles. As missile units move into overseas areas, they probably will also be supplied by direct U. S. support. Since the missile can operate from a smaller and better concealed base, this direct support would be of even greater importance. Units will be moved into position quickly without the involved process of establishing bases and building up stocks of spare parts.

Results of using the new methods will include a reduction in the size of overseas depots and actual elimination of some of them. A carefully timed phase-down of some of these activities has already begun.

Another logistics system "accelerator" is automation to facilitate materials handling. All of the depots eventually will have specially designed conveyor systems carrying material automatically through the processes of receipt, sorting, inspection, and delivery to the storage areas. The same conveyors also bring material out of storage for shipment.

Along the route of the conveyors, electronically timed units push incoming materials off into receiving bays to speed the initial sorting job. An automatic saw was developed to help uncrate boxes—it cuts through the nails that hold the lid on—and automatic canning machines provide packaging for intricate electronic parts and equipment that might be damaged easily or corroded.

In 1956, AMC instituted what it calls the aircraft and missile support management concept. Basic objectives of this system are to provide: (1) Rapid response to the supply demands of tactical units; (2) preciseness in the management of material associated with modern and expensive weapon systems; and (3) economy in

inventory management.

A support manager is designated for each new aircraft or guided missile. He assumes all supply responsibilities for the items required to support his weapon. A single requisitioning point for all supply support, regardless of property class, is established at the manager's station. All data (for example, asset records, procurement status records, stock balance reports, and logistic plans) are centrally located and under the manager's complete control. Sacramento Air Materiel Area, for instance, has been assigned responsibility for the F-100 and F-104. San Antonio Air Materiel Area is manager for the B-58, F-102, and F-106. Oklahoma City Air Materiel Area is manager for the B-52 and KC-135. Ogden Air Materiel Area handles the F-101; Mobile Air Materiel Area, the F-105; Warner Robins Air Materiel Area, the C-130 and RB-57D; and San Bernardino Air Materiel Area, the B-66 and C-133. Assignments are sometimes shifted as new developments may warrant.

Field organizations possessing these aircraft rely upon one depot for supply support or assistance on any problems.

Manager responsibilities are limited at present to aggregations of material to support a single aircraft or missile, and to worldwide distribution control of material associated with it. However, progress is being made toward extending the scope of the manager's responsibilities to include computing future requirements, budgeting, and buying. Control of inventory by electronic data processing has also begun and will be expanded as equipment becomes available.

Hi- and Lo-Valu

Two other supply programs of great importance in the Air Force are those of Hi- and Lo-Valu, both spearheaded by the Air Force Spares Study Group of Headquarters, AMC.

General objectives of the two programs are: Buy Hi-Valu items conservatively and control them precisely; buy Lo-Valu items with safe margins and simplify controls. Hi-Valu tightens controls over the procurement and distribution of the small percentage of items which account for the major portion of the dollars spent for aircraft spares and spare parts.

The Hi-Valu earmark has become well known in the Air Force through the use of special tags attached to the containers for such items. These markings make all persons who handle costly supplies aware of their value and insure speedy handling.

As a result of the Hi-Valu program and other modernized concepts in AMC management, money requested of the Congress for aircraft spares in the past six years has been reduced from 43 to 23.5 percent of the total aircraft program. This means a reduction in requests for appropriations from the Congress of 6.3 billions of dollars since 1951.

The Lo-Valu program was instituted in 1957 to reduce the amount of detailed management and manpower devoted to items that cost less than $10. There are 750,000 different items of low value, and they comprise 72 percent of the Air Force inventory.

Considerable progress has been made already in streamlining routine logistical procedures for Lo-Valu items. The objective is to simplify management to a minimum, reducing the amount of manhours spent in inventories and computing of levels. The less manpower Lo-Valu programs require, the more can be provided for precise management of Hi-Valu items.

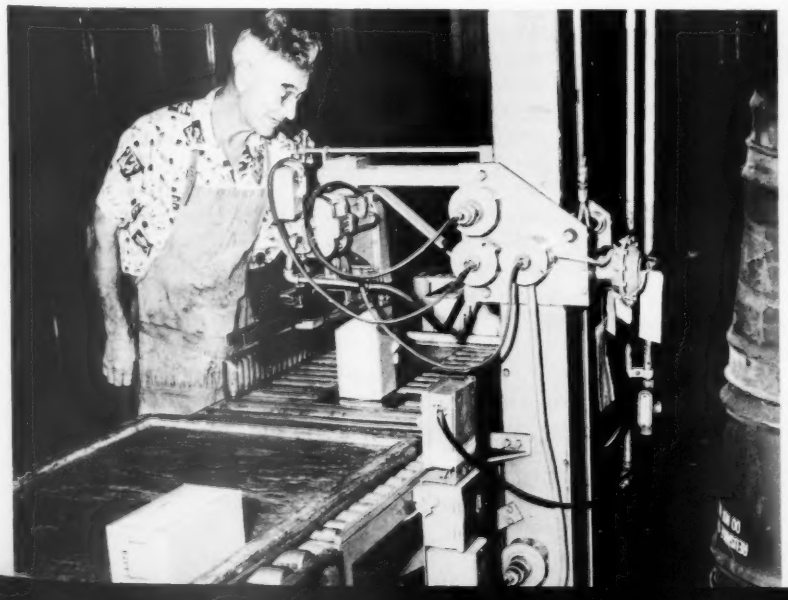
Tests . . .

AMC's Maintenance Engineering Directorate carried out a one-year service test during 1957 to speed up the correction of deficiencies on aircraft and equipment, and to promote maintainability and reliability. This test was conducted at six air materiel areas and eight contractors' plants, and will be established on a permanent basis. Officials involved in the new plan expect that many urgently needed modifications can be made in half the time now required. Consistent product improvement can be anticipated as an additional dividend of the program.

Under the former method, deficiencies were reported from the user to the air materiel areas, in turn to Air Research and Development Command centers, and finally to the contractors. Under the service test, such reports went directly from the user's bases to the Air Force representatives in the contractors' plants. There the AMC engineers worked with plant engineers in developing changes, with authority to make immediate decisions. Action was reviewed after-the-fact by ARDC.

. . . And the New Challenge

These are all methods which have been developed for improved support of our present operational weapons. Today AMC faces a new and unprecedented challenge—the problem of missile support. By the time *Sputnik I* began its orbit, AMC had already committed over 1.8 billion dol-



A carton-stapling machine is used at Oklahoma City Air Materiel Area as part of its automation program.

lars in ballistic missile contracts. Roughly one billion dollars a year is now flowing out to industry in this program.

Certain missiles have already been phased into operational units. More are on the way. AMC must be prepared to support these new and different kinds of birds, as well as manned aircraft, for some years to come.

In many respects missile support must differ from that of manned aircraft. The ballistic missiles in particular will considerably change both maintenance and supply pictures. There will be less emphasis on depot maintenance, more on mobile, on-the-spot servicing. Accordingly, as the relative number of manned aircraft in the Air Force declines in time, large repair facilities will not be needed to the extent that they are today. Stockpiling of supplies, both in the United States and overseas, will yield still further to fast supply from centralized ZI sources, with increasingly specialized control of Hi-Valu items.

Unquestionably one result will be the reduction of AMC's depot operations during coming years, as mentioned earlier. A streamlined AMC will of course remain. With the use of cargo airlift, transceivers, electronic data processing, STAR, depot automation, and other methods of speeding up supply, stockpiling at bases will be held to a minimum. Overseas organizations equipped with manned or unmanned weapons will get needed parts within a few days at the most, if they are not already on hand.

However, logistic functions will not become automatic. There will still be a need for operators of the transceivers, computers, and automatic depot processing equipment, and repairmen for both aircraft and missiles. Most of all, there will continue to be a need for an adequate staff of efficient and forceful managers to keep the Air Force combat ready at all times.

Airmen who have read this far may by now be visualizing the day of the ultimate in logistics when a spare engine for a disabled plane might be obtained (and installed) by merely pushing a series of buttons inside the plane marked "Spare Parts."

If that can ever be managed, airmen can be sure that Air Materiel Command will have a hand in it.

AMC's ROLE in the AIR FORCE

by Gen. E. W. Rawlings

Gen. E. W. Rawlings, Commander, Air Materiel Command.

In World War I an aviator's equipment was comparatively simple. The single-engine biplane, DH-4, and the trainer, JN-4D, the "Jenny," were a far cry from the supersonic jets and missiles of today.

Thus, in those days, aviation supply was simple, too. Liberty engines were elemental compared with J-79s. Machineguns were the most basic prototypes of the elaborate armament now in use. Electronics, with all its complexities, was not beyond the dreaming stage. Even radio and radar had yet to be developed.

As airplanes became the engineering marvels they are today, buying, delivering, and servicing planes and equipment became an increasingly complex and specialized job. A central logistical organization was established. Known by several names until 1946, in that year it became Air Materiel Command.

The logistical role of AMC is procurement, supply, and maintenance of the great bulk of Air Force material. The command also serves as a link between research and development and the combat Air Force, between airplanes and missiles on the drawing boards and their arrival in the field. It is an essential link, not only for the production of items, and their delivery, but also for designing into new items the engineering features needed to provide the best reliability and maintainability. AMC works to provide the preplanning of materiel, the "ounce of prevention" that is worth a "pound of cure" in terms of the most economical conservation of Air Force materiel resources.

The urgent primary objective of our mission was set forth as early as World War I by Maj. Gen. James G. Harbord, Chief of Staff of the American Expeditionary Force. He said:

"At this time there was an average of 15 days between the arrival and departure of our ships in French ports, and a maximum total of 72 days for the turn-round. . . . If we could cut one day off the 72 on each vessel, it meant many thousands of tons of additional supplies and the saving of thousands of dollars."

The necessity for operational speed and the high cost of all materiel intensified that problem in air logistics of later years. By the early 1950s, one day cut off our supply pipelines meant that thousands of tons of additional supplies would not have to be stockpiled overseas and operational costs could be reduced by millions of dollars.

Our purpose today is to provide supplies as quickly as possible to the combat forces that need them, cutting out every possible day and even hour of delay. Already we have eliminated many days—in some cases months—from pipelines that once extended up to 180 days. In achieving this, we do our part to keep the Air Force realistically ready for any demand that may be made upon it, at any time.

As the flimsy kitelike structures of World War I have developed into today's jet-powered aircraft, so AMC has also evolved from the slow, ponderous logistical methods of the past to the most advanced improvements in speedy communications, cargo airlift, and electronic data processing. Today, air logistics approach the speed and flexibility of the new air weapons they support.

ASIA BREATHES EASIER

by Bob Crawford
SAMAP

Mt. Aryat forms a backdrop for Clark Air Force Base. In the foreground is Clark's parade ground.

A USAF Sergeant Tied Three Wires Together

Death is always a passenger on mercy flights. They are made solely to save some person's life. The medics are accustomed to death and don't give it much thought. But this flight was different. Their unseen passenger had planted a booby trap.

They didn't know about the booby trap. Everything looked normal. The plane was three hours out of Bangkok over the whitecapped South China Sea and halfway to the Clark Air Force Base hospital nestled against the mountains of Luzon. Flight Nurse Mary Dobbins checked the pulse of the young, polio-stricken soldier and counted the sighs of the iron lung that breathed for him. Two physicians, Maj. Joe E. Reed and Capt. Jacob D. Samler, monitored the flow of oxygen to his mask while a medical technician, A/1C Howard Cusick, made the patient comfortable.

Then it happened.

"The patient was just beginning to relax and overcome his fear of flying in the portable lung when the thing went dead," Cusick relates. "There was no power. Boy, we got on that hand pump in a hurry."

Cusick and the two doctors stayed on the pump for the next three and a half seemingly interminable hours, taking turns until their arms and shoulders were numb with fatigue. The aircraft commander offered the help of the aircrew, but the doctors said, "No." A tired crew wouldn't fly the plane any better. Finally, the lights at Clark AFB blossomed, grew brighter, then blurred as the plane touched down gently and taxied its fragile human cargo to a waiting ambulance. The tired medics had won another fight with the Reaper.

But next time the flight might be longer—longer than they or the patient could endure. Early the next morning, Clark hospital authorities asked the Southern Air Materiel Area, Pacific (SAMAP) for a depot-level inspection and repair on the portable respirator. The Air Materiel Command organization turned the job over to its expert, S/Sgt. James L. Keith, a medical equipment repairman who had already made a name for himself, and Southern Air Materiel Area, Pacific, throughout southeast Asia.

SAMAP is the Air Materiel Command agency responsible for providing materiel and technical assistance to members of the Southeast Asia Treaty Organization and to the Mutual Assistance Program in southeast Asia. SAMAP supports the largest geographical area serviced by any AMC organization anywhere in the world. Supply lines from SAMAP span more than a million square miles of ocean and land area. The lines stretch from Guam north to Okinawa, then west, deep into the mainland of Asia.

Hospitals and doctors throughout this territory were familiar with Sergeant Keith and his job. He provides SAMAP technical assistance on medical equipment. On one 13-day trip he installed an X-ray machine and a cyclotron sterilizer and inspected medical equipment in Saigon, Vietnam; moved an X-ray machine down four flights of stairs and repaired and lubricated other equipment in a state hospital in Phnom Penh, Cambodia; performed preventive maintenance on equipment and converted a sterilizer from 110 volts to 220 volts in a Bangkok, Thailand, hospital; and inspected and serviced more equipment in Rangoon, Burma.

When he isn't on the road to one of these places or to Laos or Taiwan (Formosa), Keith works at his regular job of depot maintenance on Air Force medical equipment from Guam or Clark Air Force Base. But despite the almost never-ending variety of equipment and problems he had faced from day to day, the iron lung almost stumped him. The respirator was perfect. It had done everything it was supposed to do. The batteries had just plain quit although they were supposed to last for 12 hours.

This who no good. Batteries are all right as a temporary makeshift—strictly for emergencies—but where human life is at stake it was plain that they are not reliable enough over great distances. And distance is the thorn in the side of Southern Air Materiel Area, Pacific.

Not only is it a long way from SAMAP offices at Clark AFB to its Asian customer units, but SAMAP is itself the AMC agency located farthest from its own source of supply in the United States. Because of the distance involved, delivery to operational units is sometimes delayed—

despite electronically transmitted requisitions and airlift for priority items —when something must be ordered from the United States. But SAMAP has built itself a reputation for resourcefulness. Invention long ago became routine and ingenuity commonplace in SAMAP shops. The people of Asia, resisting Communist encroachment, have learned to rely on them. Sergeant Keith was resourceful.

The portable respirator had a built-in rectifier that automatically adapted it to either the 110 volts of alternating current found in Air Force hospitals or to the 24-volt direct-current system found in most transport aircraft. The three types of aircraft—C-47, C-54, and the Navy's R7V *Super Constellation*—used for air evacuation in this part of the world all have 24-volt electrical systems. The problem was that each used a different type of outlet. Sergeant Keith discarded any ideas of using a selector switch.

"The patient's welfare must be your first consideration," he said. "If someone accidentally hit the switch the lung would go dead. It could cause an electrical arc, too, and if there were fumes in the plane, poof! No plane, no patient, nothing. Then I hit on the idea of short adapter cords with a twist lock connector that couldn't be accidentally kicked loose."

He made three 18-inch cords, each with a plug that would fit one of the three types of aircraft. On the other end of each short cord he put the twist lock connector that tied it to the 40-foot-long main line to the respirator. A bit of paint color-coded the plugs to help the medics choose the right one. A simple metal bracket was added to bind the three cords and main line together to further protect them from accidental kicks, and the problem was solved.

It wasn't a revolutionary idea but it was typical of the way SAMAP people—both civilian (mostly Filipinos) and military—react to situations. They know how important their job is. The Philippines and many of the other free nations in southeast Asia remember the Japanese occupation. They recognize that the threat of Communist expansion is greater here than almost anywhere else in the world. To the people of these countries, Communist encroachment is not just something that might happen. It is something that is being attempted now.

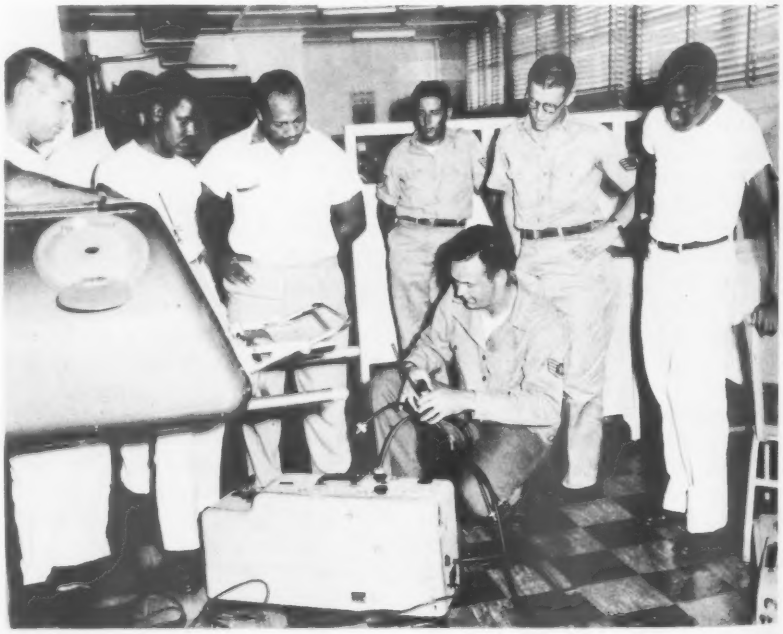
Although they have kept their independence they are fully aware of the implications of Lenin's contention that "the shortest route from Moscow to Paris is through Asia." The urgency of their determination to keep possession of the right-of-way of Lenin's proposed route is one of the things that confronts the logistics people—SAMAP—who support them. For immediate resistance they need immediate supplies. If there isn't time to go to the United States for assistance there is always an attempt, usually successful, to plumb the technical skills of the people in SAMAP shops.

The SAMAP shops have a long record of improvisation, inventions, and suggestions that have been significant factors in saving time and getting weapon systems back into operation. They have devised ways to test high-value items that they were otherwise equipped to overhaul and to avoid long, roundtrip trans-Pacific flights to the United States. After working in such an atmosphere for a year it was only natural for Sergeant Keith to adapt the iron lung to local operating conditions. But the doctors directly concerned with air evacuation felt that his adaption was more than "three wires tied together."

"The lung is absolutely essential out here where distances are great," Maj. John A. Hennessen, director of professional services at Clark AFB's 6208th USAF Hospital, asserts. "We have to work with what we have, and until such time as we get one of the new SAMs—that's the portable respirator developed by the School of Aviation Medicine—we'll have to use this one.

"Thanks to Sergeant Keith we no longer have to rely on batteries. We never knew when they were going to give out. They were sure to run down if we had any delay and the distances over which we operate makes it next to impossible to depend on them. We are grateful to Southern Air Materiel Area, Pacific and the type of men they have in their organization."

Many people in southeast Asia are grateful to SAMAP—for many things.



S/Sgt. James L. Keith explains the device he evolved to connect an iron lung to the electrical systems of aircraft used on mercy flights in southeast Asia and the South Pacific. Getting briefed are medical technicians who fly out of Clark AFB in the Philippines.

AIRMAN'S WORLD

TV WITH A PUNCH

Boeing's B-52G *Stratofortress*, newest version of the eight-jet giant which is now in production, will pack a new punch because of two major changes in design.

When delivered to the USAF, the G model will boast an addition of missiles to the armament load and a relocated tailgunner's position.

In reality, the quartet of guns mounted in the tail will not change position. However, the gunner has been moved forward in the plane to a position adjacent to the other five crew members. His "tail-end Charlie" spot has been taken over by a television camera which is coupled by a closed circuit to a monitor at the new, protected position.

The tail camera is mounted to scan the sky behind the aircraft. Once an enemy has been sighted, the gunner presses a button which places the gun turret in operation. By radar, the turret tracks the target. When the bogie has entered gun range, a light flashes and the gunner pushes a second button to fire.

The second innovation allows the addition of two North American *Hound Dog* supersonic missiles, one to be carried under each wing. These missiles may be fired while the B-52 is still hundreds of miles from preselected targets. An added advantage is the fact that they may be fired separately thus giving the *Stratofortress* the capability of destroying on a single mission, targets hundreds of miles removed from each other.

After the missiles have been sent on their way, the giant bomber can then deliver its prime bombload on still another target. The two *Hound Dogs* will account for slightly less than half the aircraft's total weapon load.

★ ★ ★

GONE NATIVE

When some people get overseas it seems they simply don't want to come home.

USAF Headquarters has been forced to remind overseas commands that requests for extension of tours beyond 48 months does nothing except increase the work of processing the denials.

The 48-month limit was established by a Department of Defense directive in May 1957. Air Force complied by advising overseas commanders that exceptions would be made only to prevent hardship and family separations resulting from the need for additional time to obtain visa, through illnesses of dependents, and other similar emergencies.

Requests for tour extensions were reduced at the time this information reached the field; however, more and more unjustified requests recently began arriving at Hq USAF.

The reminder message from DCS/Personnel urged overseas commanders —in keeping with the spirit of the DOD directive—to use means other than tour extensions to solve problems of their individual command members.

★ ★ ★

CASUALLY

No USAF stamp of approval has been awarded to any official Air Force blazer or leisure jacket and slacks combination. This information was the subject of a recent ALMAJCOM message from DCS/Personnel.

Major air commands are permitted to sanction such combinations for optional off-duty wear although USAF considers the blazer as casual civilian wear rather than an item of official clothing.

The message reminded commanders that the newly approved official mess dress uniform will be an added uniform expense and this fact should be borne in mind when consideration is being given to the sanction of unofficial casual clothes.

Only Air Defense Command has been granted permission to use the Air Force Coat of Arms as adornment on blazers worn by its members, but permission is not to be considered official authorization of the blazer and slacks combination.

The coat of arms is controlled by USAF Hq (See, *Better Double Check*, Airman's World, June issue) and may not be used without specific authority. Air Force approved unit emblems may be used on the jackets at the discretion of the major air commander.

Ten Air Research and Development Command Martin B-57 light bombers, equipped with special wing tanks containing large filtering devices, will fly through the nuclear-thermonuclear clouds over the Pacific Proving Ground at Eniwetok this summer to ascertain how "clean" our nuclear weapons are. The samples they collect will be flown back to the U. S. for analysis. Navigators will operate the cloud-sampling and radiation detection devices. Special filters, installed in the twin-jets' pressurization system, and lead vests, worn by each crewmember, will serve as protection against harmful radiation. The sampling teams are attached to the 4926th Test Squadron based at Kirtland AFB's Special Weapons Center in New Mexico. Shown here in the cockpit of his B-57 is Maj. Malcolm Bounds, veteran of five previous nuclear test series. His navigator-radiological observer, Lt. David Tapp, center, and crewchief, A/1C Ernest Fiorentin, will be participating in their third series.

DOUBLE MACH →

Convair officials have announced the formation of one of the world's most exclusive honorary societies, the M-2 Club, an informal organization composed of two wings—one bomber, one interceptor.

According to the bylaws, "any person, military or civilian, shall be eligible for membership in the M-2 Club upon completion of a flight in a Convair-built aircraft during which a speed of Mach 2 is attained."

Those eligible for membership must apply by letter to the director of the appropriate wing. B. A. Erickson, Convair-Fort Worth, heads the bomb wing, and R. L. Johnson, F-106A project officer at Edwards AFB, Calif., is interceptor chief.

Letters claiming membership should contain applicant's name and address, date and location of the flight, and the name of at least one additional person who can certify the accomplishment.

The club maintains no initiation fees or dues. Candidates accepted will receive gold pins, certificates of membership, numbered membership cards, and a copy of the bylaws.

The B-58 *Hustler*, now in production, has flown faster than 1,300 m.p.h. Convair claims the F-106 *Delta Dart*, whose top speed has not yet been disclosed, is the world's fastest and highest flying interceptor.

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COME IN, TOWER

A simple hotline device, designed to bring ground-control approach and tower operators into more closely coordinated operation was recently placed in service at RAF Bentwaters, England.

Maj. William Manby, commander of the 1246th AACS Squadron, received a $100 incentive award for his brainchild which can be installed for as little as $15 per unit.

The simple installation calls for a hotline between the GCA shack and control tower which can be switched on by the GCA controller during a run without taking his eyes from the all-important scope. As he broadcasts instructions to the pilot, they are picked up simultaneously in the control tower.

The tower operator is then able to determine the clearance request from the type of instructions relayed from GCA to pilot. Additionally, tower personnel are able to visually determine collision danger and instantly relay this information to the GCA operator for emergency use.

Officials at AACS headquarters indicate that the idea is being combined with a similar suggestion and will be incorporated into a GCA-tower coordination system now under development.

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NO VAUDEVILLE GAG

For years comedians have milked the Azusa, Cucamonga, and Anaheim gagline for all it was worth. Recently USAF erased at least a portion of the humor from the famous vaudeville quip with the announcement of a new tracking system dubbed AZUSA.

Designed and built by Convair, the system couples a ground transmitting station with a small receiver-transmitter carried by all ballistic missiles launched at the Air Force Missile Test Center.

The ground station and missile "talk to each other" in a rapid-fire exchange of signals. The result is the availability of continuous precision data on the position and velocity of the missile. This data is then fed into a computer which produces instantaneous and continuous predictions of where the missile would land if its power were cut off at any second.

Information is traced on a huge plotting board for the range safety officer. Whenever the missile appears to be straying from the flight safety zone, it is immediately destroyed.

The entire ground portion of the system consists of a single station with a compact array of eight antennae. A "transponder" is borne aloft as a part of the internal missile equipment. This simply picks up signals from the ground station, modifies, and rebroadcasts them. The ground station then receives the secondary signals and feeds them to the computer.

An advanced AZUSA system is presently being developed for installation at AFMTC early next year.

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← LARGE ECONOMY SIZE

The 86th Fighter-Interceptor Wing, presently headquartered at Ramstein-Landstuhl AB, Germany, is reported to be the largest F-86D all-weather interceptor wing in the USAF.

Located in central Europe for the last 12 years, the unit recently added three new squadrons to bring its total to seven tactical units, all equipped with North American F-86D aircraft.

The move was the result of a recent realignment of the tactical posture of Air Force units assigned to NATO, de-

signed to provide greater deterrent capability.

Formerly a part of the 406th Fighter-Interceptor Wing, all three new units were previously based in England. The 512th Fighter-Interceptor Squadron operated from RAF Bentwaters prior to the move and is now located at Sembach AB, Germany. The 513th FIS and 514th FIS were based at RAF Manston and are now operating from Phalsbourg AB, France and Ramstein-Landstuhl AB, Germany, respectively.

The four original units of the 86th are the 440th FIS, Erding AB; 496th FIS, Hahn AB; 525th FIS, Bitburg AB; and 526th FIS, Ramstein-Landstuhl AB, all located in Germany.

★ ★ ★

LESS KP

Food service activities—cooking, baking, meat-cutting, and even traditional kitchen police duties—are now being contract-operated by civilian concerns at 13 ZI Air Force bases.

Additionally, Cooke AFB, Calif., USAF's first missile-training base, has been authorized to contract its food service activities in fiscal year 1959. Pacific Air Forces has also received approval to contract such services in dining halls at Hickam and Wheeler AFBs in Hawaii beginning next July. Several overseas bases in Europe presently have civilian food service contracts.

Other stateside bases are considering contracts and will begin the new type operation, if and when they find suitable contractors. To qualify, contract units must meet specifications outlined in AFR 146-8 which establishes the policy for contractural feeding. Such operation is authorized only when it is considered more economical and when sufficient funds are available on a yearly contract basis.

Civilian-contract management of dining halls has made possible more effective use of military personnel and has released airmen from KP for military duties for which they have been specifically trained.

Likewise, career food service airmen are being released for retraining into more technical career fields where shortages of qualified personnel exist, a fact that has been a major morale benefit. A certain number of food service personnel are being retained to satisfy USAF requirements elsewhere.

In addition to full contractural operations, another 21 bases are buying precut meat on an experimental basis. Extensive money-saving has resulted by elimination of transportation costs for unused portions such as bones and tallow, and by reducing the expenditure for new equipment and maintenance on old machinery.

However, further expansion of precut meat-buying activities will depend on the standardization of the buying program in all three military services.

In the event precut buying is more widely adopted, this too would aid in releasing airmen with meat-cutter AFSCs for retraining into direct-support skills where USAF needs are greater and advancement opportunities are improved.

DART PLAYERS, TAKE CARE. This two-place version of Goodyear Aircraft Corporation's *Inflatoplane* recently made its debut. Built by the company under terms of a joint contract with the Office of Naval Research and the U. S. Army, the 290-pound craft is adaptable for all types of Army field operations, particularly reconnaissance work. Packaged in a 44-cubic-foot container, it can be transported by truck, jeep trailer, or aircraft. Inflatable in 10 minutes, it has a cruising speed of 70 m.p.h. and can take off or land in a variety of unimproved areas. Inflation pressure is eight pounds of air per square inch; average auto tire requires 24.

GOTTA GLOW ON

Air Training Command aircraft recently joined a growing group of the Nation's military and civilian planes which have taken on a new luster.

Fluorescent paint, called dayglow, has been adopted as an experimental interim protective device against mid-air collisions. Originally developed as an eye-catching medium for roadside billboards, the paint is being utilized in its new role as a possible solution until a completely workable proximity warning-device can be developed.

Many private civilian aircraft have adopted the stopgap remedy, and civilian airlines are now considering its use. ATC has adorned each of its more than 2,000 aircraft with a band of the glowing paint to aid civilian authorities in determining how long the paint will stand up in its new role.

Each Navy aircraft which participated in *Operation Deepfreeze III* last winter had the tail section and wingtips sprayed with the glowing paint.

IN MEMORIAM

First Air Force ROTC graduate of Queens College, Flushing, N. Y., to give his life in line of duty was honored by his fraternity brothers, AFROTC cadets, and distinguished civic and Air Force officials last month in campus ceremonies.

Lt. Allen N. Rea chose to sacrifice his own life rather than jeopardize a multitude of others last year when he rode his disabled North American F-100 *Super Sabre* into the ground to assure that it would not crash into a mental hospital in Zeist, the Netherlands.

In commemoration of his heroic act, officials at Queens College approved renaming the AFROTC building on the campus in his honor—Lt. Allen N. Rea Hall.

Ceremonies included unveiling of a plaque, donated by the Beta Phi fraternity of which he was a member, and a formal review featuring the Queens College cadet corps. Gill Robb Wilson's famous poem, "Courage," read by one of Lieutenant Rea's fraternity brothers, climaxed the program.

In addition to members of the military staff at Queens College, Maj. Gen. Turner C. Rogers, Commandant of Headquarters, Air Force ROTC, represented the Air Force. Among the many city and college dignitaries who participated in the rites were the Honorable Gustave Rosenberg, Chairman of the Board of Higher Education of New York City, and Dr. John Theobald, President-on-leave of Queens College.

Shooting the Breeze

Cast Your Bread

In the early days of World War II the chief of the AAF Public Relations Division received daily telephone calls from a newspaperman in New York. The reporter presented numerous questions about Air Force operations and insisted on prompt answers.

After some months of questions the chief called one of his officers and instructed, "Get this man down here and into the Air Force. Make him a lieutenant—no, make him a captain."

A short time later the reporter was processed and commissioned a captain. The project officer reported to the chief, "The reporter is here and ready for duty. What assignment shall I give him?"

"What assignment?" snapped the chief. "Put him to work answering all those fool questions he has been asking!"

I Agree with Me

Several Air Force colonels found themselves gathered in an unofficial session in the Pentagon. As colonels will do, they began evaluating the situation and probable courses that events would take. After several had expressed their opinions the senior spoke up. "I don't agree with you. I think that this is going to happen." Then, he added candidly before continuing, "I'll admit that I'm the only one whom I've talked this over with who agrees with me."

Team Effort

Seamstresses, welders, and a large dose of ingenuity all figured in "bedding down" a recent arrival at Ramstein-Landstuhl AB, Germany. The young giant who created the consternation was A/2C William Bell who tops out at six feet, seven inches.

It took a pair of beds, welded together, to provide ample leg room for a good night's sleep. Two standard USAF blankets were stitched together to assure the feet would stay covered.

Bell checked in as the largest baby—two feet long—ever born in Tampa, Fla. His size does have its compensations, however. He is rated as one of the finest basketball players in Tampa's history.

Do you have a humorous experience about Air Force life? Send it to us. The success of this column will depend upon your contributions. Remember that AIRMAN *means officers too.* —HHH

TECHNICIANS—DOUBLE TIME

Instead of normal Reserve training activities, Springdale, Connecticut's Air Force Reserve flight successfully completed a special $150,000 scientific study during a recent six-month period.

The flight is comprised almost exclusively of engineers and scientists; therefore, it came as no great shock when the unit was chosen for a special research project.

A complicated intelligence-data-collection problem was channeled to the unit by ARDC's Rome Air Development Center. Lt. Col. Frank L. Thomas, RADC Chief of Operations, was assigned as monitor.

ARDC officials indicated that the successful Reserve undertaking compared to similar first-phase study contracts which have been contracted to university and research firms in the past. The results of the study will be used in further application projects.

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Technicians responsible for firing USAF's modern missiles aren't the only ones confronted with technical "bird" problems. Unlike an aircraft, the crew of which simply ferries it to the base of operations, missiles must be transported. Result is a new missile transportation course at Sheppard AFB, Tex. M Sgt. Hobert Pedersen is one of the instructors charged with teaching the many technicalities of the complex operation. Douglas C-124s and C-133s (See, *Queen of the Heavies*, March-April issue) and Lockheed C-130s (See, *Hercules—A Legend Come True*, June issue) are the prime aerial transport vehicles.

NEW SKY EYE

A newly designed stereo-camera is undergoing extensive testing at Air Defense Command's Weapon Evaluation Center, Tyndall AFB, Fla.

Designed basically to record fighter-interceptor attack and target approach procedures, the camera possesses the additional capability of producing photos with three-dimensional capacities. If successful, the unit may eventually replace the present split vertical arrangement used in aerial photo reconnaissance. (See, *Spy in the Sky*, May issue.)

The camera, designed and built by members of the 4750th Test Squadron at Tyndall, is carried in a specially designed mount beneath the wings. Convair F-102 fighters were utilized during latest camera test runs.

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OFFICER PROMOTIONS

All regular Air Force and Air Force Reserve second lieutenants completing three years of promotion list service (PLS) during the last quarter of the current calendar year will be considered eligible for the next promotion cycle.

Promotion to first lieutenant on a fully qualified basis or possible elimination from the service will be considered by the Review Board, scheduled to convene at USAF Headquarters in early July.

In the future, review boards will convene during the first week of each quarter to consider promotions for this grade three to six months in advance of the date on which the three-years' PLS is completed.

Details of the program are spelled out in ALMAJCOM message AFPMP-4A-126923, dated 21 April.

At the same time DCS/Personnel officials announced that because of the large numbers of augmented officers involved, the regular Air Force permanent major and permanent captain Review Boards have been delayed and are now tentatively rescheduled to convene during the first part of August.

BITS OF BLUE

. . . USAF officials recently accepted their eighth consecutive Award of Honor from the National Safety Council. The award is made annually for outstanding performance in ground safety operations worldwide.

. . . Three units were programmed for overseas movements during late June. The 327th Fighter-Interceptor Squadron was scheduled to relocate at Thule AB, Greenland, from George AFB, Calif.; the 324th Fighter-Interceptor Squadron will move from Westover AFB, Mass., to Sidi Slimane AB, Morocco; and the 95th Bombardment Squadron (Tactical) will operate from RAF Sculthorpe, England. Their stateside home station was Eglin AF Auxiliary Field #9, Fla.

. . . Huge reductions in transportation costs and man-days lost resulted from the expanded direct-reservation system for movement of USAF personnel to and from overseas areas during 1957. Savings of more than $600,000 in costs and 600,000 man-days were realized as a result of the program. Further expansion during 1958 is expected to appreciably increase these savings.

. . . Work has begun on the 700-unit Capehart housing project at Altus AFB, Okla. The contract exceeds $10 million.

. . . Patrick Missile Range was redesignated Atlantic Missile Range on May 1.

. . . Airman Proficiency Tests (APTs) for selected ladders of the 27 and 30 career fields are now being rewritten and will be available for the September and October testing periods.

. . . A three-quarter million dollar contract was recently awarded for personnel facilities construction at K. I. Sawyer AFB, Mich. (See *Personnel Facilities*, June issue, THE AIRMAN.) Construction will include a service club, NCO open mess, clothing store, chapel educational wing, and recreation library.

. . . Two new messages from Hq USAF, dealing with transportation and transportation accounts, have been forwarded to the field. An ALMAJCOM letter deals with claims for reimbursement by members or heirs for household goods shipped or stored at their own expense. The second message is AFMTP-MC-P-2 and the subject is Household Goods Shipping Entitlements Incident to Separation as an Officer and Reentry into Service in Enlisted Status.

. . . An all commands message has advised commanders throughout the Air Force to inform personnel being transferred to Loring AFB, Maine, that a serious housing shortage exists in that area and is expected to continue for an indefinite period. Transferees should not plan on moving their families into the area until suitable quarters have been obtained.

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IN MY OPINION

How Do I Transfer Out of This Outfit?

There is a certain relief in change, even though it be from bad to worse; as I have found in traveling in a stagecoach, that it is often a comfort to shift one's position and be bruised in a new place.

—WASHINGTON IRVING.

"HOW DO I transfer out of this outfit?" This expression with an additional inelegant and salty adjective is familiar to everyone in the Air Force. Actually, it has been kicked around for so long that the phrase has very nearly lost its meaning, but it endures as part of the colorful Air Force jargon along with such homey but rather vague sayings as "shape up or ship out" and "don't hiss, re-enlist."

But how did the "transfer out" phrase come into being in the first place? And why is the thought of greener pastures elsewhere so prominently in the forefront of many Air Force minds? The origin of the familiar catch phrase can be traced back to World War II and Korea when hardship and discomfort were part and parcel of daily life. It was quite natural for an airman to wish he were somewhere else when the bombs were falling on London, or when he was living on C-rations on a mountainside in Korea. But even today in the relative comfort and security of peacetime duty, the "ship out of this outfit" impulse crops up too frequently.

A Matter of Morale?

If pressed for an explanation of this phenomenon of behavior, most airmen would say that it was a matter of morale and, indeed, this is very close to the truth. If further pressed for a definition of morale, many airmen would explain that it had to do with comfortable living quarters, clubs, commissaries, recreational facilities, and the like. This popular belief is not true. A comfortable and pleasant environment may contribute to morale, but military experience teaches that good morale does not depend on the existence or the absence of creature comforts.

Consider the 19th Bomb Group in the early stages of World War II. They were shot-up, bombed, outnumbered, and stepped upon. They suffered terrible personnel losses, but the morale of the group was superb and they were able to fight as long as one B-17 could stagger into the

air. Compare this group with 8,000 American militiamen who marched out to defend the city of Washington against 2,000 British troops in 1814. Although they outnumbered the enemy by four to one, the militiamen scattered at the first shot and ingloriously fled from the battlefield. History is studded with examples proving that morale can very often be the deciding factor in a military contest.

What then is this elusive quality of morale, and if it is so important what can be done to foster it?

Every group of human beings joined together by a bond of common interest assumes a collective personality peculiar to itself. This is illustrated in the unity of the family group, in the national characteristics attributed to a race of people or a country, and quite vividly, in American business corporations. Canny and perspicacious public relations practitioners on New York's Madison Avenue describe it as the "corporate look," and business firms spend millions of dollars each year in an effort to develop a corporate personality which will endear them to the public.

How does this business of the collective personality apply to a military organization and to morale?

Each base supply squadron in a tactical wing is very much like another—on paper. Each is authorized the same number of men and the same items of equipment. The mission is identical and, generally speaking, environmental facilities follow the same pattern. So many theaters and bowling alleys are provided for so many men, and duty hours are pretty much the same all over the world. In actual practice, however, it is well known that one squadron may enjoy the reputation of being a "good outfit," while another will have a higher percentage of administrative "snafus," mistakes in the payroll, Article 15s, and general shortcomings in efficiency. The difference lies in the magic of morale.

Morale—A Two-Way Street

The squadron commander obviously exercises considerable influence on the morale of his unit. There was a time when commanders of the old school endeavored to attain efficiency by the power to compel obedience. In another age and in an utterly different military atmosphere, this may have worked well enough to some extent. Modern, intelligent management concepts have killed off the "tell-'em-nothing-and-they'll-do-it-because-I-say-so" school of thought, and Air Force commanders exercise leadership by inspiration rather than by compulsion.

But the best squadron commander in uniform cannot build morale single-handed any more than he can personally receive and issue every item in the supply catalogue. Morale is a two-way street. It must come from the top down, and from the bottom up. To borrow a slogan to fit the case, "Morale is everybody's business," and it concerns everyone from the commander down to the newest rosy-cheeked airman fresh from the hallowed halls of Lackland. The corporate personality, the unit spirit—call it by any name—can be no more than the sum total of contributions made by individuals to the collective personality. If the contributions are good, the result is good. If the contributions are unworthy of the individuals making them, the result is waste, inefficiency, trouble—poor morale.

So far there is nothing complicated or obscure in this message; everyone is against sin and nobody actively or consciously does anything to injure the morale of his unit. But there are subconscious, beneath-the-surface forces in everyone, and these forces, if unrecognized and uncontrolled, can spoil a career and mar a good outfit.

Airman Smith and Tired Blood

Take the case of Airman Smith stationed at a base in Florida. He has just asked the first sergeant for a transfer because he "hates the place," and because his "morale is low." The base is the beauty spot of the Air Force. The sun shines 365 days a year and soft breezes from the ocean whisper through the palm trees. Airmen spend most of their off-duty time cavorting in the surf or riding in motor boats provided by special services. Salt water and fresh water fishing are fabulous. Miami, Jacksonville, and Daytona are all within reach on a Saturday afternoon. Airman Smith talks about his "low morale," like it was "tired blood." He wants out!

In reply to the first sergeant's questions, Airman Smith admitted that he liked his job as a driver in the motor pool. He had no trouble with his supervisors; he intended to make a career of the Air Force and he had just recently been promoted. The first sergeant sent Smith back to duty and that same afternoon the airman wrinkled up the fender of a new staff car, thus ruining the squadron safety record for the year. Why did Smith, a good driver and a conscientious airman, have an accident?

At the next interview, the first sergeant really pinned Smith down. After some time he admitted, a little shamefacedly, that he didn't like the base because the salt air was ruining the paint on his personal automobile. Ridiculous? Not to Airman Smith it wasn't. His own automobile—not particularly new and not very expensive—was his most treasured possession, the reward of many months of thrift and sacrifice.

Obviously neither the squadron commander or the Air Force could exercise control over salt air coming in off the ocean, yet Smith, a good man otherwise, was endangering the success of his own career and muddying-up the morale of his squadron.

Whom Does the Shoe Fit?

The solution to such a problem—and there are hundreds of others very much like it—lies within the man himself. If Smith had taken his problem out of the shadowed recesses of his mind, held it up to the light, turned it over and examined it, he would have realized that others around him were faced with the same difficulty and were at least living with it. Perhaps he would not have found a solution, but in the clear light of day he would see the futility of taking his annoyance out on the Air Force and his squadron.

The moral of the story is: next time an attack of "low morale" strikes, look within thyself before blaming your troubles on others. If the morale of the outfit is low, *you* may be responsible.

This piece of work was due on the editor's desk yesterday afternoon. It didn't make it because the family car needed to be washed. The editor hasn't smiled all morning. Who do I see about a transfer out of this outfit?

—T SGT. JOHN K. O'DOHERTY

IT'S A GRAND OLD NAME

Today's *Explorers* are blazing new trails in the space age and fittingly so, for they bear the same proud name of pioneer craft which endowed them with inspired luster and high tradition back in the '30s at a place called the Stratobowl.

by William A. Kinney

Historic achievement is a part of our tradition. Here is the account of what occurred a quarter of a century ago. In 1934 and 1935 the Stratoflights of the first Explorers *carried U. S. airmen to record altitudes of 11.5 and 13.71 miles, now recognized as the zone of partial spaceflight equivalence. Many years later General of the Air Force "Hap" Arnold wrote that the scientific data acquired, "bore fruit in World War II far in advance of what was imagined to be the results at the time."*

Guiding genius in planning these historic missions was that grand old gentleman of American science, Dr. Lyman J. Briggs, Director Emeritus of the National Bureau of Standards, and Chairman of the Scientific Advisory Committee for the Stratoflights. Thanks to his cooperation and the fortuitous association of the author with him in a number of scientific projects in the past, THE AIRMAN *is able to present one of the most highly dramatic, suspense-packed stories in air-age pioneering.*

—THE EDITOR

☆ ☆ ☆

THE Stratoflights may seem like a long time ago but when I dropped in on my good friend, Dr. Lyman J. Briggs, I found his memory of those two stirring feats as vivid as if they had taken place only yesterday. He stoked his inevitable pipe and we settled down in his office to swap reminiscences.

Time backtracked for me swiftly to 1934. The Nation is deep in the trough of the Great Depression. Farmlands lay seared by the worst drought in decades. The finest sirloin steak costs only 23¢ a pound. For a young reporter, I feel affluent getting a fat 50 bucks a week, all takehome, and driving a slightly used Chevie I'd just bought for $185.

Across the seas, Mussolini is poised for the rape of Ethiopia. Hitler, not yet supreme in the Third Reich, shocks the world with the ruthless "blood purge" of opponents in the Nazi Party.

Our new B-10 can top 200 m.p.h.; ceiling about 28,000 feet. And Buck Rogers, first of the generation's space comic strips, orbits into its fifth year.

These, then, are the times—the backdrop for the maiden mission of U. S. airmen beyond the frontier where the atmosphere sustains human life.

"Actually," Dr. Briggs recalled, "we began our planning in the summer of 1933 and I don't doubt many felt the project was a waste of money, considering the country's desperate economic plight at the time. Moreover, the general public could not have been expected to appreciate the fact the undertaking might serve some useful purposes."

That's for sure was my reaction. The evolution of flight after World War I had been a gradual process. No one in those days could have foreseen how swiftly it would be accelerated within a few years under World War II's initial pressures, to say nothing of the revolutionary impact to follow soon with the harnessing of jet and rocket propulsion.

Dr. Briggs nodded. "Of course, the Scientific Advisory Committee for the flight was looking farther ahead than most persons, yet neither I nor my colleagues expected to see in our lifetime manned, powered flight at altitudes then so extreme as to be wildly visionary. As for the coming of the space age, who could dream it was so close upon us?"

Combined Operations Plus

One of his happiest memories about the Stratoflights, he recalled, was the fine cooperation they elicited.

"It was a grand combined operation, devoid of all rivalry or selfishness," said he.

"As you know, the major participants were the U. S. Army Air Corps and the National Geographic Society, which sponsored the flights.

"But the ground forces also were well represented—the Signal Corps for communications; the Engineers who created near the launch site a fully equipped cantonment; dismounted Fourth Cavalry troopers who quickly mastered ground crew duties; even National Guardsmen. Welcome assistance, too, came from the Navy's Research Laboratory."

He pulled down a report from the bookshelf. The roster of all participants would run at least a column in small print. It included Federal agencies, educational institutions, industrial firms contributing supplies or furnishing them at cost, air lines, a railroad, radio stations, and so on. The lineup ranged from the giant American Telephone and Telegraph Company to the high school football squad in nearby Rapid City, a community of about 11,000. A. T. & T. provided special circuits and teletype machines gratis. The young gridsters lent the football helmets the flight crew wore for crash protection.

"How was it," I asked, "that your planning took in most of the key matters which concern space medicine now?

"The pressurized gondolas constructed for the Stratoflights now stand out as prototypes of today's hermetically sealed experimental cabins.

"Your crews were the human guinea pigs in our first operational test with a packaged atmosphere environment.

"All the research subjects sound up-to-the-minute — temperature cycles, types of radiation encountered, composition of the atmosphere, light phenomena and visual problems, and so on down the list."

He gestured deprecatingly. "These were subjects obviously of scientific interest. We sought to increase our knowledge. The usefulness of new knowledge often is not apparent for a long time. Then progress develops something and applied research discovers that this knowledge can be utilized on problems inherent in the development or facilitate its improvement."

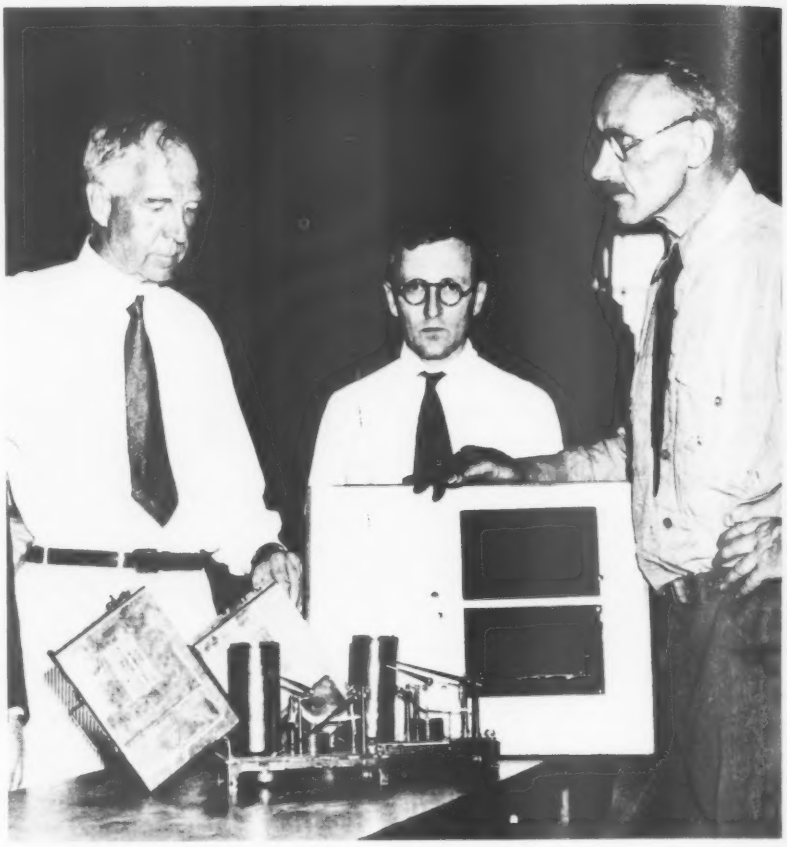
That, he conceded frankly, was the story with much of the scientific data developed in the Stratoflights now finding practical application.

"By present day standards, of course, quite a bit of our equipment may seem antique and improvised," said Dr. Briggs. "However, it all functioned surprisingly well and demonstrated it embodied sound concepts for applied research to adapt and refine in the future."

Mindful of the criticism, following the success of the *Sputnik I*, that many fields of pure research had been neglected in this country, I observed that at least in what was to become known as space medicine we had been on the ball far ahead of other nations.

Dr. Briggs pondered. "I was going to say we probably were not conscious of getting into that specialized field. However, I do remember now there was one medical officer, who had an absorbing interest in the projects and later prepared a fine professional paper on the results. I refer to Capt. Harry Armstrong who later became Air Surgeon General.

"He was keenly alive to the potential medical yield, hence I would regard General Armstrong as the Father of Space Medicine."



METAL FINGERS THAT WROTE THE LOG. Beside the two uncovered barographs are Dr. Briggs, head of the Stratoflight Advisory Board; Dr. W. G. Brombacher, specialist on altitude instruments, and Captain Stevens. The smoked sheets for the barograph drum are held by the Air Corps officer. Carried outside the gondola in sponge-rubber-stuffed boxes the barographs suffered small damage in the final crash and the drum records were recovered intact. Still very active in scientific matters today, a quarter century after the Stratoflight, Dr. Briggs celebrated his 84th birthday this spring.

© National Geographic Society

Cast Off!

But now to the Stratobowl and the *Explorer*. From the flat bottom of this pit in South Dakota's Black Hills, walls curve up to rims 515 feet above the launch site. All the way up the bowl's sides grow stand after stand of timber—tall evergreens in serried ranks like waiting lancers.

"Those spiked slopes were one big reason why we had to have nearly ideal weather," Dr. Briggs explained. "Inflated for takeoff, the balloon's top would be 315 feet above the gondola. Thus when the gondola was airborne 200 feet, the balloon itself would be only emerging above the rim.

"Under the best conditions that rim was swept by a surface wind of eight miles per hour. Any treacherous change in the wind could hurl the big bag on the trees and the gondola against the rocky slopes.

"Everything was ready July 9, 1934, except the weather and that kept us fretting for weeks." Here he spoke of another nightmare.

The *Explorer* took three million cubic feet of hydrogen, a gas of unmatched lift but highly explosive.

"Naturally," he went on, "we had a rigid no-smoking ban at the gas storage area, as well as the launch site. A spark in either vicinity at the time might have made the bowl a huge crematorium for us all."

The fretting over uncooperative weather and the treacherous hydrogen continued for seven weeks. Finally the afternoon of August 27 brought a favorable forecast for the morrow. All worked untiringly through the night to permit ascent around dawn, the time of lowest surface wind.

First light was spilling across the sky when three Air Corps officers climbed into the gondola. They were the commander, Maj. William E. Kepner, Capt. Orvil A. Anderson, both now major generals, retired, and Capt. Albert W. Stevens, a light colonel at his death in 1949.

Above the gondola the largest free balloon yet built bobbed with the bowl's air currents, tugging hard at its mooring lines.

Dr. Briggs' watch showed 0544 hours with the second hand racing toward the next minute. Then the moment came, and the command:

"Cast Off!"

Up went the *Explorer* even more rapidly than expected. For those at launch site there was a haircurling instant as the balloon veered toward the timber-spiked, steep upper slopes. Then a big cheer of relief woke all echoes as the flight cleared the rim by a good margin.

Rendezvous with a Space Trap

"What I didn't realize in my jubilation," the good Doctor smiled, "the margin was too good. To keep the immense envelope from swinging too near the bowl's sides, 400 pounds of ballast had been dropped.

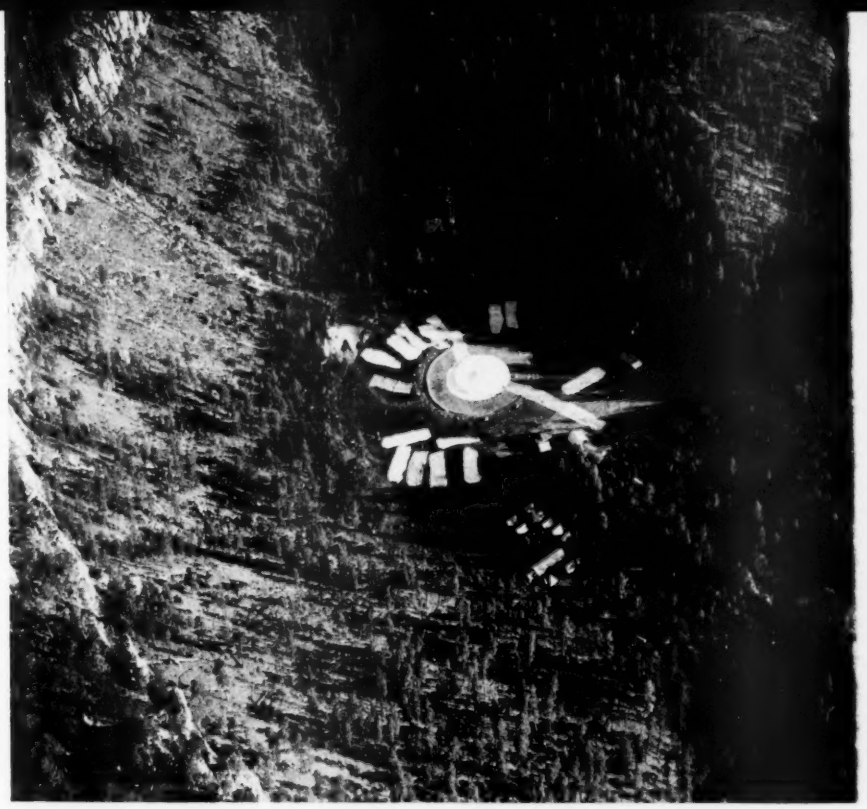
"That made the balloon too 'light' for the planned ascent rate. Not until 14,500 feet did they succeed in overcoming the excess buoyancy."

For all the flying I've done in planes, blimps, or big dirigibles like the Navy's *Akron* or the ill-fated *Hindenburg*, 14,500 feet is not the altitude at which I have any interest in getting outside to clamber around. That's what these boys did, however, to check on various instruments and other gear draping the exterior of the gondola.

It was not until 16,500 feet that this gamboling around outside ended. The hatches were buttoned up and the first real test of a packaged atmosphere space cabin began. Stevens in a postflight report states he found the gondola "a pleasant compartment . . . very livable."

Inside offered scant room for gamboling. The gondola's diameter was eight feet, four inches. The floor at its widest was only 4⅓ feet. The lack of elbow room left the trio no choice but to turn to their programmed work. This was to monitor a battery of instruments and other equipment crammed into the cabin. Most of these were either miniaturized or of special light-weight construction. For visual observations and photography there were 10 portholes.

It was one of those uneventful "routine" missions for the next three hours. Nearing peak altitude, the men were dazzled by the fiery brilliance of the sun. In it the balloon's ropes seemed to glow with an eerie fluorescence.



LAUNCH SITE, BIRD'S-EYE VIEW. The 200-foot across white circle on the Stratobowl floor is protective canvas covering the balloon envelope which, inflated, took 3 million cubic feet of gas. The envelope took a bit over 2 1/3 acres of fabric. The seams joining its panels would extend 8 ¼ miles in a straight line. Rectangular tarpaulins are ground cloths for keeping bag's fabric dry and clean when spread for inflation. Cantonment (left) provided scientists' and officers' quarters. Rugged nature of bowl's timbered sides is apparent at a glance.

Air Corps Photo

Another striking phenomenon was the strange contrast in the sky. Seen through the ports, angled at 45 degrees from the vertical, the heavens had a deep-dyed blue color as when viewed from very high mountains.

What a difference to look through the gondola's dome port! I later heard Stevens grow lyrical about the sight. To him, even many years later, it was "like black velvet on which ink has been spilled and dried."

This weird visual contrast characteristic of space beyond, now discussed frequently in professional space medicine articles, was first described in the reports of the *Explorer's* we-were-there crew.

As the ascent continued into this cold, silent, lonely realm, there came a sudden little clatter atop the dome. The hour: 1300.

Peering through the dome port, the men saw what caused the noise, a small rope which belonged in the assembly at the throatlike bottom portion of the balloon. One look upward at that stiffened them. A sizable rip yawned in the lower portion of the envelope.

All recognized the rip threatened disaster. Chances of escaping unscathed would be touch-and-go. Kepner quickly ordered descent.

But the balloon didn't respond. Instead, it kept on upward—1,000, 2,000, 3,000 feet higher! And there at over 60,000 feet invisible forces held it stationary in a space trap.

Ordeal to Journey's End

SOP for descent in a free balloon like the *Explorer* is to valve off gas, thus decreasing the bag's lifting power.

GOING UP! Terra firma recedes as *Explorer* passes the 15,000-foot altitude mark after its initial runaway ascent rate had been checked.
Air Corps Photo

SECONDS BEFORE DISASTER. Ripped into a big parachute, the bag is now only 5,000 feet above Nebraska. Torn cloth that had formed the balloon's lower section curls around rigging lines (right), obscuring gondola. Moments later exploding hydrogen disintegrated the bag in a burst of shredded fabric.
Air Corps Photo

At the rip's discovery, valves were first opened part way, then more and more until they were open wide. Still the balloon balked at the normal response and the rip in the bag widened slowly, inexorably.

What explained the bag's behavior? Its hydrogen was expanding under the sun's afternoon heat, gaining in lift power and further distending the envelope's size, also the pull on the rip. The hydrogen being valved off was not enough to compensate for the increased heat factor.

A stark suspicion seized the crew.

"Just try to conceive the men's mental stress," Dr. Briggs invited. "Their first thought was the gas valve had malfunctioned. They had no way of seeing or hearing that it was working as perfectly as before.

"Despite the suspicion, feverish valving continued. There is no better evidence of the superb self discipline, steady nerves, and dedication of these valiant men than in these dire moments when they proceeded to take atmospheric samples and record other scientific data, as per schedule. At intervals, one or the other would broadcast a report calmly.

"For almost an hour the crew perservered in its dogged fight to reduce the bag's buoyancy. Meanwhile three smaller new tears were spotted.

"After an eternity, altimeters began registering a slow descent."

He handed me a copy of Major Kepner's official report.

1415 hours. The *Explorer* had eased slowly from its space "prison" down to 53,000 feet . . . 1425 hours. 48,000 feet.

But the threat of disaster stalked the Stratoflight relentlessly downward. The rips widened. The crew began to speculate about the possible seepage of atmospheric oxygen into the envelope. They knew that an admixture of oxygen with hydrogen is highly explosive under pressure. Whatever their misgivings, the instrument monitoring went on methodically and the voice radio relayed the data, along with impersonal reports of the balloon's deteriorating condition.

1510. 20,000 feet. Hatches were cracked to equalize pressure, and opened wide at 18,000 feet. Out clambered the men to inspect the balloon from atop the gondola. More tears were visible than through the dome port. Would the envelope hold together? Wavelike motions now swept across the fabric, tugging the numerous rents wider. The waves gave the envelope a billowing parachute effect. How much longer?

The crew chose to play it out. At 11,000 feet they began to parachute down instruments and equipment carried outside the gondola.

1531. 10,000 feet. The crew agreed it was probably time to bail out, yet none wanted to abandon the gondola's scientific cargo.

1535 hours. 4,000 feet. Suddenly the entire bottom portion of the balloon dropped out as if it had been punched out. Kepner gave the word to get ready to hit the silk. First more instruments were 'chuted earthward and Stevens went back into the gondola to discharge ballast. The balloon had been traveling southeast over Nebraska farmland which is about 2,000 feet above sea level, the calibration point for the altitude instruments, hence the *Explorer* was less than a half-mile above ground.

1538. Anderson, standing with his feet blocking the hatch, was having trouble with his 'chute and Kepner was busy assisting him. Suddenly the balloon exploded in a great burst of shredded fabric. "Shove off, Anderson," Kepner ordered. The 'chute opened immediately.

Next Stevens literally dove from

APPARATUS CRAM GONDOLA. Some idea of the aerial laboratory borne aloft by *Explorer* may be gained from this view which takes in about one-third of the gondola's interior. The numbers indicate: 1 to 4—flasks for obtaining samples of stratosphere air; 5—electroscope; 6—observation ports; 7—balloon valve hose; 8 and 9—devices for recording instrument dial readings; 10—hatch; 11—camera to record barometric readings; 12—barometer box; 13—movie camera; 14—radio transmitter and receiver; 15, 16, and 20—batteries; 17—container for liquid oxygen and nitrogen; 18—exterior air pressure dial; 19—gas cylinder pressure dial; and 21—direction of observation port.

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the gondola through the 18-inch-wide escape hatch and pulled his ripcord.

A split second later Kepner jumped. Stevens estimated his 'chute opened at 1,500 feet. He had the brief, fantastic experience of dropping almost even with the gondola.

1540. The gondola crashed in a drought-blackened cornfield, exploding a huge burst of dirt around it. Kepner, the first of the crew to reach it minutes later, found it a total wreck, crushed by the force of impact.

Postmortem Appraisal

The last word from the *Explorer* to reach the tense groups in the Stratobowl came a little after 1535. It was Kepner's voice.

"We are about ready to jump . . . We are settling . . . bag badly torn up . . . There has been in the bottom a good deal of surging air . . . Descent very rapid . . . I don't know, I am going to . . ."

Then the nothingness of silence.

"Those were agonizing, long minutes back at the Stratobowl after that," Dr. Briggs looked somber with the recollection. "I had only one thought, the safety of that crew. It seemed aeons before word came all had landed unhurt. But the gondola was wrecked."

The immediate disposition, he acknowledged, was to write off the flight as a gallant failure as far as its scientific purposes, but that proved to be undue pessimism of the moment.

The program centered broadly on four objectives: the intensity and direction of cosmic radiation at high altitudes; the position and distribution of the ozone layer in the stratosphere; the composition of stratosphere air samples; and the comparison of altitude measurements as determined from photographs made with the gondola's vertical camera, with the altitude computed from the pressure and temperature of the air at the instant the photograph was made.

"Thus I summarized matters in one of my reports," the scientist commented. "Since most of that data would be recorded on film, the initial expectation was all that had been ruined in the crash.

"Strangely, I did not think it equally important then to enumerate equally important matters. For example, the practicability of our packaged atmosphere system concept; temperature and humidity control; the light phenomena characterizing zones of extreme altitude; human reaction to conditions of space flight equivalence, and quite a few other things."

When Major Kepner reached the smashed gondola, he likewise concluded at first that all instruments had been irreparably damaged. To remove them from the cabin he had to hack through the hull with an axe.

So closely had people been following radio accounts of the flight that Kepner found some 20 persons already clustered around the wreck when he got there after landing 200 yards away. Soon the cornfield was swarming with hordes of men and women, highly excited and all crazy to get their hands on some souvenir of

the disaster, anything. The protective force Kepner recruited from the original 20 had a bad time of it until they finally got the area roped off.

"Unquestionably vandals made off with data of probable value to us," Dr. Briggs said, "but writing off the photographed scientific data as a total loss proved unwarranted. A substantial amount of film remained tightly wound on the spools, most of it in passable condition. Then, too, quite a number of the instruments parachuted down were recovered intact.

"As we were to learn after lengthy study," he observed, "the results, in terms of the major points of scientific interest, averaged 50 to 90 percent of our optimistic target expectations." He offered a brief resume.

Cosmic rays. Although the data secured on this mysterious form of radiation fell 50 percent short of hopes, it yielded new information on how the intensity of these rays steps up sharply at altitudes increasingly remote from sea level. It also provided evidence that most of the original rays are enfeebled in transit through the denser atmosphere to sea level, and also that rays travel not only vertically but horizontally, as well as in other directions.

Characteristics of the upper atmosphere. The return here was voluminous. It ranged from the composition and properties of the air, temperature changes, to the great shift in wind direction and velocity characterizing the rarefied upper atmosphere and the radio's performance.

Light phenomena. Three spectrographic studies were completed, one of the skylight, another of sunlight, the third of horizon light. There were also the firsthand observations of the crew on the scattering light effect responsible for an inky heaven in one direction and blue in another.

In retrospect it is still difficult for me to understand why one highly significant aspect of the Stratoflight, in terms of future importance, aroused such minor attention in 1934 as to suggest its success had been taken for granted. This was the satisfactory way in which the packaged atmosphere concept had delivered.

"We took that pretty quietly, didn't we?" I asked.

"Perhaps, in a manner of speaking," Dr. Briggs conceded. "Of course, both the gondola structure and its artificial environment represented very painstaking planning. I don't recall any grave misgivings on their meeting the test. No, we worried a lot more about other matters."

The *Explorer's* packaged atmosphere system introduced concepts basic today in simulated spaceflight experiments.

For keeping the air of the gondola breathable after sealing of hatches a two-component method was devised. Three vacuum-insulated flasks were carried, each containing a mixture of 45 percent liquid oxyden and 55 percent liquid nitrogen. This mixture, evaporated through the coils of a special apparatus, kept the air's oxygen content close to a rich 45 percent as compared with the normal 21 percent at sea level.

The other component had a two-fold function. It absorbed from the air the carbon dioxide men exhale—a gas toxic if allowed to accumulate in a sealed compartment. It also acted as a dehumidifier, removing the excess moisture a closed atmosphere acquires from the water a man gives off either in the form of exhaled vapor or perspiration.

This operation was accomplished by steel screens holding bags of sodium hydroxide—a chemical which not only combines readily with carbon dioxide but also has a strong affinity for water. The screen was opposite the electric fan which kept the air circulating.

"In the moisture and temperature control departments, however, the performance was not so efficient, mind you," the scientist chuckled, as if scolding himself.

I brought up the question of reaction to psychological stress, a question that much preoccupies space medicine specialists today.

"This Stratoflight, of course, did not involve conditions we may expect to prevail in manned spaceflight at high velocities," he replied.

"It did, however, require the adjustment to a strange new environment for several hours, and these three airmen seemed to adapt themselves quite readily. One reaction they had in common—and one which doctors now find duplicated in men making high-altitude ascents—was the feeling of being completely divorced from the earth, as it were, a sense of exhiliration and spiritual independence of our planet, so to speak.

"As for stress and tension, it is hard to conceive of a mission imposing greater, more prolonged strain on individuals. And how magnificently these officers rose to the occasion with disciplined courage in the best tradition of the wings they wore.

"You can well say that everyone of us was highly pleased when they were awarded the Distinguished Flying Cross.

"To my mind the best index of the physiological and psychological effects on the officers is the fact they were eager, enthusiastic to make the Stratoflight again. They felt Fate had robbed their mission of the full success it came so close to realizing.

"If they were enthusiastic about a second try, so were we. Had they not, I doubt that another *Explorer* would have added its dramatic chapter to the story of space reconnaissance a year later."

(To be concluded next month)

NEAR COUNT-DOWN'S END. The *Explorer's* gear gets final check before takeoff. Atop gondola is Stratoflight commander, Major Kepner. The head of another crewman, Captain Stevens, appears in open center hatch above the coiled 580-foot drag rope for use in landing. Basketlike object near Kepner housed a spectrograph for obtaining data on light phenomenon. This was lowered 500 feet below gondola in flight. Dark bundles in rigging contain chutes for dropping batteries and instruments carried on gondola's exterior.

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The end of a military career need not mean the end of a productive life. Here's a . . .

New Career for "Old" Airmen

by M/Sgt. Hal Bamford

Dreams of taking permanent possession of a shady spot on the bank of a quiet stream after you retire and spending the rest of your life idly enticing the hungry trout may be great, but let's face facts.

In most cases, you'll need some form of "supplemental income." Work of some degree will be necessary for most retirees. (See, *The Magic Twenty*, THE AIRMAN, October 1957 issue.) Add to this the fact that the majority of newcomers to the retired rolls are comparatively young men and you have a real dilemma.

Officials in USAF headquarters report that Air Force retirement rolls are expected to nearly double within the next three years with the addition of approximately 30,000 new names. If all of the retirees choose the same stream when they doff the blue suit, it's going to get mighty crowded and there simply aren't enough trout to go around.

"Okay," you say, "I'll go to work." Where? Now, don't misunderstand. Many of you have skills, learned and perfected during long years of service, that industry will jump to accept. But a quick look at almost any daily newspaper also brings the unwelcome tidings that, despite the fact that you are a comparatively young man, after 40 you're "old" as a beginner in industry's eyes—and in many places you simply aren't wanted.

There *is* a place where you are wanted, however—not only wanted but, in most cases, desperately needed. The field? Professional education.

Throughout the United States there is a serious shortage of trained teaching personnel; a shortage that has become so acute that several Government agencies have joined forces in seeking a solution.

The Department of Health, Education, and Welfare (HEW); the Department of Labor; and the National Educational Association (NEA) have all made extensive studies and issued repeated bulletins in the quest for new teaching personnel.

President Eisenhower has repeatedly stressed the need for increased interest in all phases of the profession with particular emphasis on mathematics and science. He has pointed to the potential source of supply among military retirees, and the services have been quick to accept the cue.

The concensus of professional studies, while varying in degree, proves conclusively that a drastic shortage exists. Even acceptance of the most optimistic figures must result in a pessimistic outlook.

For example, the 1957 HEW report pegs the deficit of fully qualified teaching personnel at 135,000. That was the situation facing the Nation at the opening of the 1957-58 school year.

A footnote in the report indicates that this shortage would "probably be met by the use of additional emergency teachers, the re-entrance of former teachers into the profession, and by *further overcrowding*." In short, larger classes, less variety of subject matter, and even shorter school days to assure that everyone gets at least the *fundamentals* of learning.

It's a pretty grim picture, and the inevitable question must be, does the present method of supply give any indication that the shortages will be eliminated in the next few years?

The answer, again unhappily, is an emphatic "no!"

In addition to the 55,000 teachers needed simply to alleviate present overcrowding and to absorb the increase in enrollment, some 7.5 percent leave the profession every year through death, retirement, marriage, or to accept positions in some other field. That amounts to more than 90,000 annually, which brings the total to 145,000 new teachers needed each year.

Over the past few years, college graduating classes have turned out approximately 110,000 potential teachers annually. Even if all these people went into the profession, demand would still be outstripping supply. But only about 80 percent of those qualified at the primary teaching level and less than two out of three at the secondary level ever find their way into the system. The usual annual supply barely exceeds 80,000. The result—the deficiency is increasing by leaps and bounds.

True, all the figures cited are for "fully qualified" personnel. Again, this is the ideal situation. A good portion of those jobs can be filled with people who are not yet fully qualified but working toward that end; emergency teachers, such as qualified women who have left the profession for marriage and can return on a part-time basis; and teachers returning to the profession from other fields. But even with this added source of supply, all interested agencies agree that the shortage continues to increase.

The result is these agencies must seek aid from other sources, and one of these is the pool of retired military personnel.

Even a quick glance confirms the Air Force as a potential source of supply. As mentioned earlier, the next three or four years will see some 30,000 USAF personnel becoming eligible for retirement. Quite naturally, all

30,000 are not going into the teaching field. Many do not possess the qualifications. Many have no desire to teach. And many, even with the desire, would find themselves facing years of personal schooling in order to meet even the basic qualifications.

On the other hand, a growing percentage of potential military retirees either already possess the education or are close enough so that they can make up their deficiencies between now and the time they are scheduled to doff the blue. Of the 30,000 potentials, estimates, derived from educational averages throughout USAF, would seem to indicate that one-third already qualified would be a conservative figure.

Qualifications

A key point to remember is that a degree in the field of *education* is *not* a prerequisite for teaching. Most systems do require a certain number of hours in education, however. With the principal shortages existing in mathematics and science, people who hold degrees such as engineering are in short supply and major demand.

Educational qualifications alone does not mean that you are teaching timber—it does mean, however, that there is a vast untapped source of potential teachers in the military who could easily be channeled into the drastically short market.

In addition, a military person has one powerful factor working for him that many people do not possess—extensive experience in working with people; a hard-won, psychological ability, honed to razor sharpness by years of use. This is a priceless possession in teaching.

There is a pressing need, and the services are a potential source of supply. The obvious question is, why the drastic need? What makes teaching such a shunned field?

First, it's not a field which can be entered into lightly. Preparation is only a part of the story. The work is hard, the hours long, the pay far from the best. Without an outside source of income, most teachers have a problem making both ends meet. Here is where the retired military man has a distinct advantage. As pointed out earlier, a supplemental income is almost mandatory for the military retiree.

A master sergeant with 20 years, under the new pay scales, draws retirement pay of $175.00 monthly—just over $2,000 annually. With a bachelor's degree and a teaching job in an elementary school in a city of approximately 25,000 at retirement, the average wage is $4,300 annually. Add that to retirement pay and it becomes above average income for a city of that size.

Still Time to Fish

In spite of the fact that the teaching profession makes an inordinate number of demands upon your time, there is still ample time to fish. The full summer vacation may be a dream. Additional courses which you need may demand summer school attendance, or possibly you may be required to teach a summer session. However, regular school holiday periods for Christmas, Easter, spring vacations, and other numerous brief breaks combine to make a pretty fair composite loafing picture—one at any rate which is comparable with most full-time jobs.

Returning to the matter of educational qualifications—these are established by law within the states. Yet, they vary so widely that almost anyone with the desire should be able to find a place for himself. That word, desire, keeps coming up. Most educators agree that it is a major item of qualification, and it can work in many ways. First, there has to be the desire to work with youngsters. Then, the desire to attain the necessary educational qualifications for yourself is a must.

No one can provide the first. The latter is something you must answer for yourself.

On page 48 there is a chart showing the minimum requirements for entry into teaching in every state and territory of the United States.

Columns three and six indicate semester-hour requirements in professional education subjects, and this can cover a multitude of subjects ranging from the history of education through educational psychology and physical education. Columns four and seven refer to practice teaching, a part of the professional subject requirements.

However, the need throughout the country is so desperate that if you can meet the basic qualifications, most educational governing bodies are willing to make allowances and assist you in attaining the necessary balance of requirements while you, in return, assist in alleviation of their teacher shortage.

Dr. Ray Maul, Assistant Director of the Research Division, NEA, explained this willingness. "In every state there is a tendency toward leniency in demanding immediate professional educational training from teaching applicants, providing they make an effort to continue their education—usually during summer sessions—while they teach. Most professional educators prefer to call this a 'reasonable adjustment' to the tragic shortage."

Attainment of a teaching job without full credentials requires three-way cooperation according to Dr. John B. Whitelaw, Professional Teaching Division, HEW. "First, of course," he pointed out, "there has to be a desire on the part of the superintendent of schools in the area in which you wish to teach. Secondly, there has to be a teacher educational institution willing to offer classes in the evenings or on weekends which the OJT-type teacher may attend. And finally, the state certification officer must be willing to issue a certificate to a person with limited qualifications."

There are several examples throughout the Nation of such plans already in effect. Los Angeles anticipates the need of some 15,000 teachers during the next five years. The city is making a concerted effort to interest and attract military retirees to the Los Angeles area and into the Los Angeles public school system. The University of Southern California is working hand-in-glove with the Los Angeles Board of Education and has established special training courses to qualify teachers in off-hour training.

Specifically, the Los Angeles-University of Southern California program is aimed at persons holding a bachelor's degree but not presently in the teaching profession. Candidates are required to attend USC classes during the summer session immediately prior to the opening of the public school year. During this period they study such diverse professional subjects as child development, the learning process, guidance and evaluation, and directed teaching.

Minimum Requirements for Lowest Regular Teaching Certificates

State	Elementary School			High School		
	Degree or Number of Semester Hours Required	Professional Education Required, Semester Hours (Total)	Directed Teaching Required, Semester Hours (Included In Column 3)	Degree or Number of Semester Hours Required	Professional Education Required, Semester Hours (Total)	Directed Teaching Required, Semester Hours (Included In Column 6)
1	2	3	4	5	6	7
Alabama	B	30	3	B	24	3
Alaska	90	16	4	B	16	4
Arizona	B	18	6	5	18	6
Arkansas	60	12	3	60	12	3
California	B	24	8	5	22	6
Colorado	60	20	4	B	20	4
Connecticut	B	30	6	B	18	6
Delaware	B	30	6	B	18	6
District	B	40	6	5	24	6
Florida	B	20	6	B	20	6
Georgia	B	18	6	B	18	6
Hawaii	B	18	AC	B	18	AC
Idaho	B	20	6	B	20	5
Illinois	B	16	5	B	16	5
Indiana	B	35	6	B	18	5
Iowa	60	20	5	B	20	5
Kansas	60	6	0	B	18	3
Kentucky	B	28	8	B	18	8
Louisiana	B	24	4	B	18	4
Maine	96	AC	AC	B	12	0
Maryland	B	32	6	B	16	3
Massachusetts	B	18	2	B	12	2
Michigan	B	20	5	B	20	5
Minnesota	B	30	6	B	18	4
Mississippi	B	24	6	B	18	6
Missouri	64	5	0	B	18	5
Montana	64	30	10	B	16	3
Nebraska	12	6	0	B	18	3
Nevada	B	18	4	B	18	4
New Hampshire	B	AC	6	B	21	6
New Jersey	B	30	6	B	18	6
New Mexico	B	24	6	B	24	6
New York	B	36	12	5	18	2
North Carolina	B	18	3	B	18	3
North Dakota	32	16	3	B	16	3
Ohio	B	28	6	B	17	6
Oklahoma	B	12	0	B	12	0
Oregon	B	20	4	B	24	6
Pennsylvania	B	30	6	B	12	6
Puerto Rico	67	30	6	B	21	5
Rhode Island	B	30	6	B	24	6
South Carolina	B	21	6	B	18	6
South Dakota	30	5	2	B	20	5
Tennessee	B	24	4	B	24	4
Texas	B	24	6	B	24	6
Utah	B	30	8	B	22	8
Vermont	B	18	6	B	18	6
Virginia	B	24	100 CH	B	18	100 CH
Washington	B	27	10	B	27	10
West Virginia	64	11	3	B	20	5
Wisconsin	64	26	8	B	18	5
Wyoming	60	NS	NS	B	20	C

Extracted from *A Manual on Certification Requirements for School Personnel in the United States* published by NEA.

AC—Approved curriculum. B—Bachelor's degree of specified preparation. C—Course. CH—Clock Hours. NS—Not Specified. Where the figure 5 appears under the high school section in the degree or number of semester hours required column, this specifies a bachelor's degree plus a fifth year of special preparation, not necessarily completion of a master's degree.

With the opening of the fall term, the candidate assumes a regular salaried teaching position in Los Angeles and concurrently, at night or on Saturday, attends classes at USC related to current classroom problems.

The following summer he is required to take an additional 10 hours of classroom work to complete the requirements for his permanent teaching certificate. Classes during this period are determined largely by individual advisement.

San Francisco has established a similar program. Purdue University has launched a special program for the preparation of teachers for college mathematics. And Duke University is preparing an equivalent course of instruction. Many other cities and colleges are studying these programs and will unquestionably join the parade within the next few years. All of these plans are aimed primarily at the potential military pool of teachers.

If you have the desire, you also have the opportunity. Educational opportunities within the service have been increased many-fold since the close of World War II, and the military man who does not have at least a smattering of "higher learning" is becoming more of a rarity every day.

In the September 1957 issue of THE AIRMAN, these opportunities were outlined in an article, *A Little Learning Is a Dangerous Thing*.

"Operation Bootstrap" has placed a college degree within the reach of every airman's finances. The only thing he needs is the personal desire.

The problem then is how to determine if you are qualified to teach, and if not, what additional work is needed?

The first move is to select your place of retirement. Then write a letter to the Director, State Department of Education, in the capital city of the state you have selected. He will provide a complete rundown on the necessary qualifications.

The job placement facilities of the public employment service, Department of Labor, are ready aids. Applications may be filed at any local office. They have a professional network clearance system that ties together 83 major employment offices throughout the country. Officials in the Washington office noted that this network is not confined to placement of teachers, but is available to all former military personnel—disabled, separated, or retired—no matter in what field they are seeking employment. However, they also point out that applications have the best chance of being filled if they are for a shortage occupation, and there is no occupation in America that has a shortage equal to that in the teaching field.

Fishing for recreation may be the greatest thing in the world. It even has its compensations as a means of earning a living. However, serious doubts exist as to one's ability to earn a living of any magnitude by dipping a line into a quiet trout stream.

It can provide satisfaction, it's true, but satisfaction can be just as great in a field where you can foster and aid the growth and future of your country. As a retiree, you've given a piece of your life to insure its present. Another piece to assure its future could have double compensation —personal satisfaction and a fair supplement to that retirement income.

The Long Voyage Home

IN 1941 when Bill Wheeler of Easterly, Tex., enlisted in the Army Air Corps his mother gave him a small pocket Bible. Bill dutifully inscribed his name on the fly leaf. Like an unruly cowlick over the forehead, Bill's handwriting marked the point of his progress along the highroad of life. Bill Wheeler was 17.

Two years later, on February 4, 1943, T/Sgt. Bill J. Wheeler died with his B-17 crew over the north coast of Germany. The Bible was left somewhere in the barracks when the *Flying Fortress* took off on the disasterous raid.

From there the little book with Bill Wheeler's name inscribed on the inside might have disappeared forever, if the mysterious forces of Fate hadn't stepped in to take a hand.

As later events indicated, the Bible passed into possession of an unidentified buddy in the 323rd Bomb Squadron of the 91st Bomb Group who carried it about in his pocket. He carried it, that is, until August 12, 1943—a black day in the history of the Eighth Air Force.

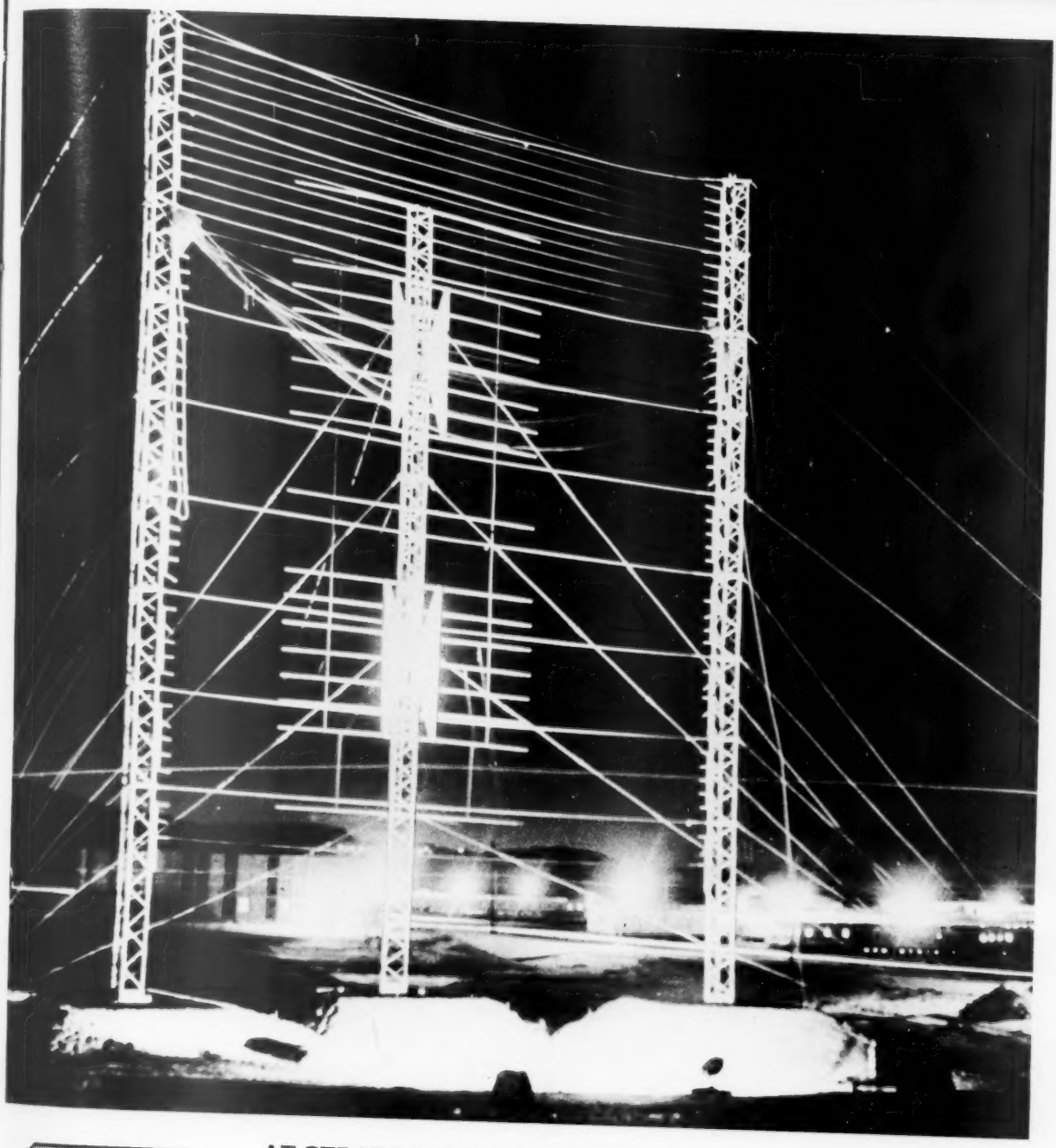
On that day, 25 bombers were shot down over the area of the Rhur Valley in a raid against industrial targets. Next morning the Bible was found in the pocket of a torn flight jacket in the suburban garden of Frau Theodor Hillebrand, a German housewife.

Frau Hillebrand, a devout Christian, examined the book. Carefully she read Bill Wheeler's name written in schoolboy script somewhere in faraway America. Then she slipped the book into her pocket and decided not to deliver her find to the authorities as the strict regulations of Germany required. Frau Hillebrand was determined that the little book would someday go home.

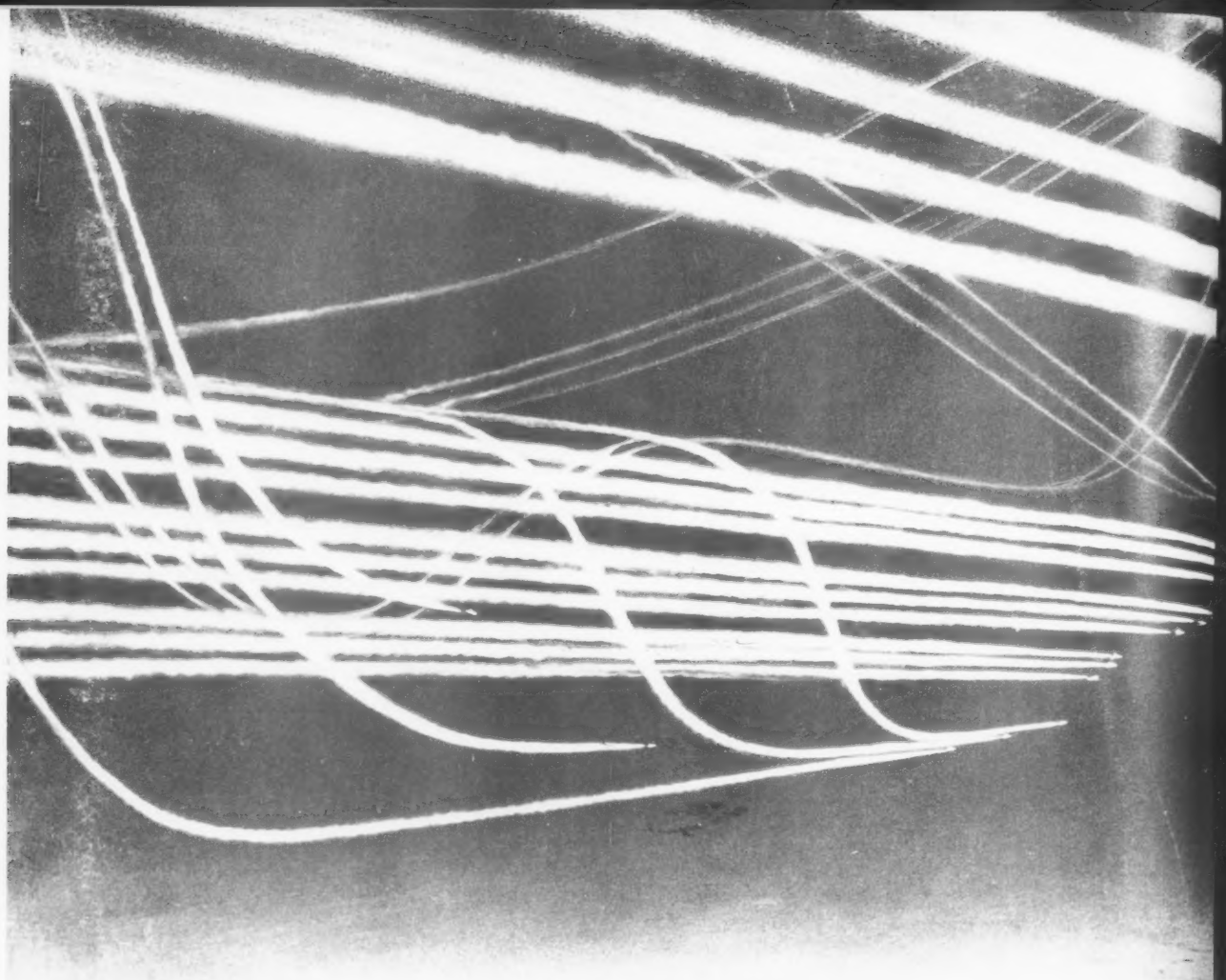
Time passed and the war ended. The Americans did not occupy the area of Dortmund where Frau Hillebrand lived, but she was patient and determined to return the Bible even though the years were slipping by.

Then as the spring of another year painted the countryside with the warm colors of new life, a young girl of the neighborhood proudly brought her bridegroom—an American serviceman—to the Hillebrand home for tea. Frau Hillebrand produced the little Bible from its resting place, and told her story. The American passed the word to his unit chaplain. It took a little time to trace Bill Wheeler all the way back to 1942, but presently it was done, and the little book was sent on its way for the long voyage home.

Bill Wheeler's pocket Bible is now back in Texas in the hands of his mother, Mrs. Susie L. Wheeler of Easterly. Frau Hillebrand looks at her 17-year-old son and is glad.



AT STRATEGIC AIR COMMAND'S THULE AIR BASE IN GREENLAND, NEWLY INSTALLED SINGLE-SIDEBAND ANTENNA SPARKLES LIKE A NEON BILLBOARD. GLOW IS CAUSED BY REFLECTION OF FLOODLIGHTS WHICH PERMIT CONSTRUCTION TO PROCEED ON OUTDOOR PROJECTS DURING THE "DARK SEASON" OF THE FAR NORTH. NEW SINGLE-SIDEBAND INSTALLATIONS HAVE SHARPENED THE GLOBAL EARS OF SAC'S KEY COMMUNICATIONS SYSTEMS.



. . . We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. . . . And for the support of this Declaration, with a firm reliance on the protection of Divine Providence, we mutually pledge to each other our Lives, our Fortunes, and our sacred Honor.

Declaration of Independence, 1776